SERVICE MANUAL

SANYO

STEREO RADIO CASSETTE RECORDER

M7950LU

EUROPE

142 369 04

SPECIFICAITONS

Power Source	
AC	115V/230V (50/60Hz)
DC	9V (UM-2, Babyzelle, R 14) x 6
Output Power	3W x 2 (Max.)
Power Consumption	12W
Current Consumption (at Vol. Min.)	
Record mode (with Metal)	315mA
Playback mode	200mA
Fast Forward mode	200mA
Rewind mode	200mA
Recording System	AC Bias
Erasing System	AC Erasing
Tape Speed	1-7/8ips. ± 3%
Wow & Flutter	0.15% WRMS
Fast Forward Time	120sec. (with C-60)
Rewind Time	120sec. (with C-60)
Frequency Response (Overall)	
Fe_2O_3	50Hz~ 14,000Hz
CrO_2	50Hz~ 14,500Hz
Metal	50Hz~ 15,000Hz
Erase Ratio (Overall, with Fe_2O_3)	55dB
Signal to Noise Ratio (with Fe_2O_3)	40dB
Crosstalk (with Fe_2O_3)	
Track to Track	50dB
Channel Separation (with Fe_2O_3)	30dB
Harmonic Distortion (K3, with Fe_2O_3)	5%
Hum & Noise (at Vol. Min.)	−60dBs
Input Sensitivity and Impedance	
MIC.	0.3mV/4.7kΩ
LINE IN	100mV/60kΩ
Output Level and Impedance	
LINE OUT	300mV/5kΩ
Ext. Speaker	2~ 6Ω
Headphone	8Ω
Oscillation Frequency	61kHz
Frequency Range	
MW	525~ 1,605kHz
LW	150~ 350kHz
SW	6~ 18MHz
FM	87.5~ 108MHz

−Specifications subject to change without notice.−

NOTE:
The above mentioned specifications are mainly based on the IHF measurements standard. They can therefore not directly be compared with specifications based on the DIN standard or other standards.

DISASSEMBLY INSTRUCTIONS

GENERAL REMARKS

* Before disassembling the unit, spread a soft rubber mat or a cloth on the workbench to avoid scratches and grease stains.

* Do not spread anything which is likely to cause static electricity because transistors and ICs may be easily damaged by it.

* Reassemble the unit, noting the kinds of screws and the soldering and arrangement of the leads. Refer to "Circuit Diagram and Exploded Views" for correct assembly.

* Before disassembling the unit, take out the cassette tape and the batteries from it.

Soft-touch Mechanism

This Model adopts the soft-touch mechanism (Mechanical Logic System) which makes use of the motor rotation. This mechanism causes the following symptom because of the use of the motor rotation and the symptom shall not be considered defective.

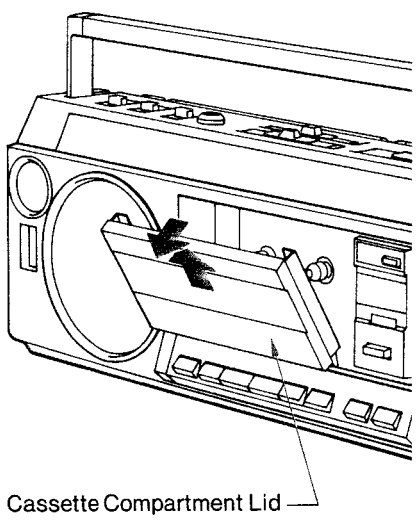
* When the PLAY button is pressed with the batteries almost used up, the Head advances forward and stops on the way. It does not return to its original position even if the Stop button or Eject Button is pressed.

  When the above symptom is observed, the Cassette Compartment Lid cannot be opened. Be sure to open the Lid after all batteries with new one and then, press the Stop button or Eject button.

CASSETTE COMPARTMENT LID REMOVAL

1. Open the cassette holder by pressing the Eject button.

2. Slide the Cassette Compartment Lid in the direction of the arrow and detach the Lid.

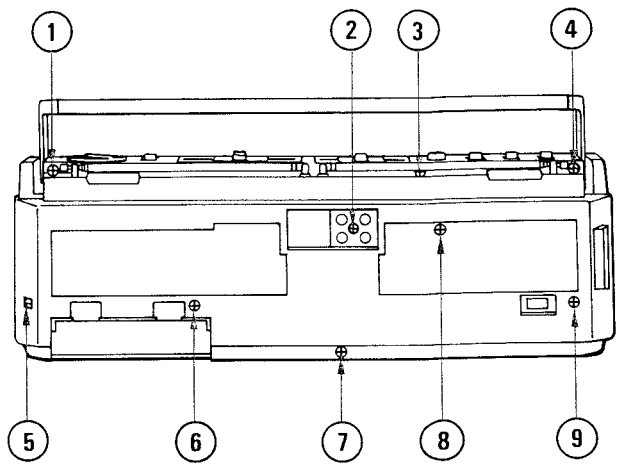


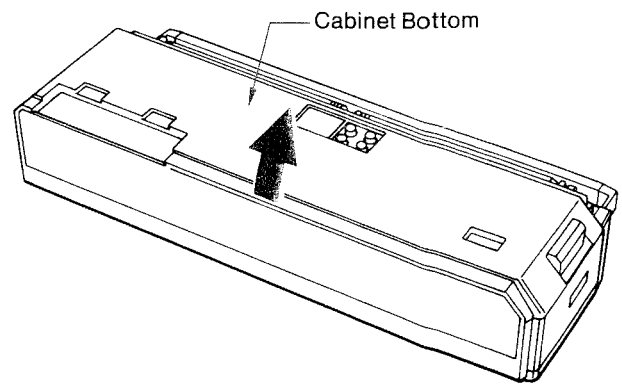
3. Reassemble in reverse order.

CABINET BOTTOM REMOVAL

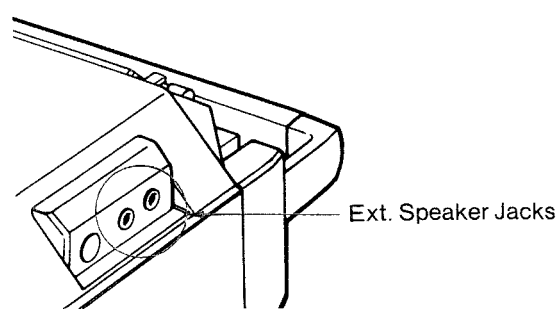
1. Detach the battery compartment lid and remove the nine screws (1 ~ 9) fastening the Cabinet Bottom.

2. Remove the Cabinet Bottom by lifting it in the direction of the arrow and pull out the two antenna connectors from the Radio Tuner P.C.Board.





NOTE:
Check to see that the Ext. Speaker Jacks are inserted into the holes of the Cabinet Bottom correctly when the Cabinet Bottom is mounted to the unit. Then, tighten the fastening screws.



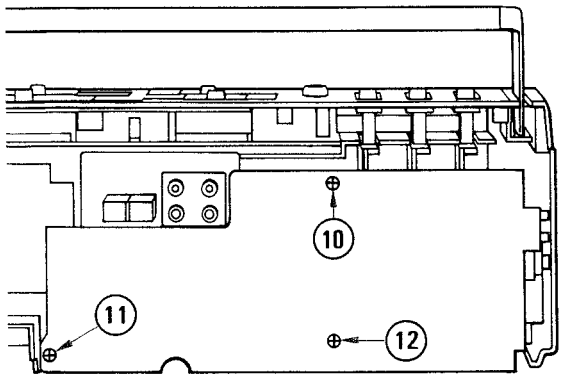
3. Reassemble in reverse order.

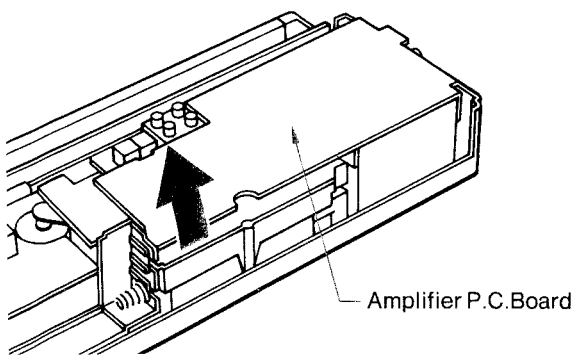
DISASSEMBLY INSTRUCTIONS (Continued)

AMPLIFIER P.C.BOARD REMOVAL

1. Remove the Cabinet Bottom by following the instructions for it.

2. Remove the three screws (10 ~ 12) fastening the Amplifier P.C.Board and detach the Amplifier P.C.Board by lifting it in the direction of the arrow.



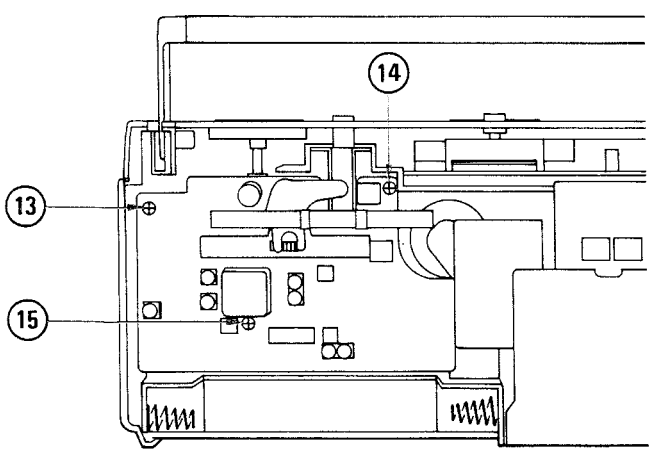


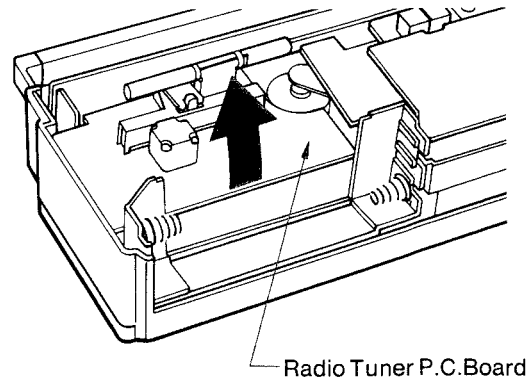
3. Reassemble in reverse order.

RADIO TUNER P.C.BOARD REMOVAL

1. Remove the Cabinet Bottom by following the instructions for it and turn the Tuning Knob fully in an arbitrary direction.

2. Remove the three screws (13 ~ 15) fastening the Radio Tuner P.C.Board. Then, detach the P.C.Board by lifting it in the direction of the arrow.





3. Reassemble in reverse order.

NOTE:

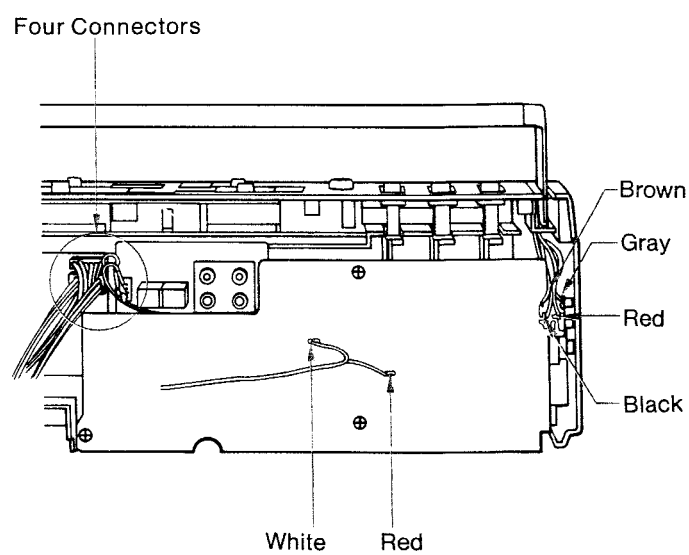
* Do not turn the Tuning Knob before the Tuner P.C.Board is re-mounted to the unit.
* When the Radio Tuner P.C.Board is mounted, insert the shaft of the variable capacitor into the hole on the drum. After that, check to see that correct dial indications are obtained.

RADIO CHASSIS REMOVAL

1. Remove the Cassette Compartment Lid and Cabinet Bottom by following the instructions for them and pull out the Tuning Knob, Volume Control Knob, Balance Control Knob, Treble Control Knob, Bass Control Knob, and Mixing Mic. Volume Control Knob from the unit.

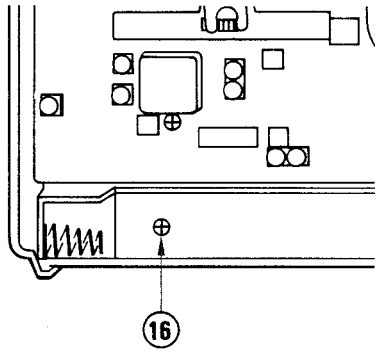
2. Disconnect the following lead wires from the Amplifier P.C.Board.
   * Four leads (brown and gray, red and black), running the Speakers
   * Two leads (red and white), running the AMSS Control P.C.Board

   Then, pull out the four Connectors from the unit.

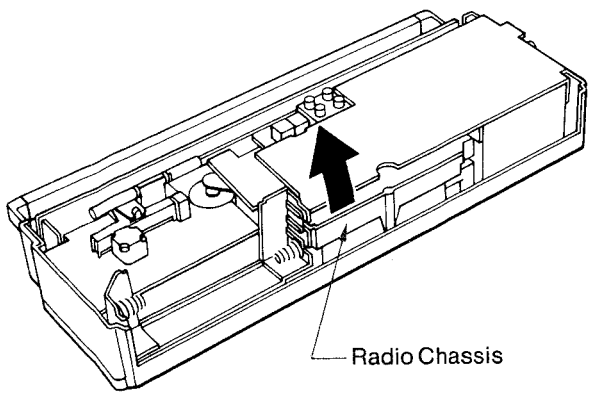


DISASSEMBLY INSTRUCTIONS (Continued)

3. Detach the disconnected lead wires from the lead arrangement and remove the screw (16) fastening the Radio Chassis.



4. Remove the Radio Chassis by lifting it in the direction of the arrow.



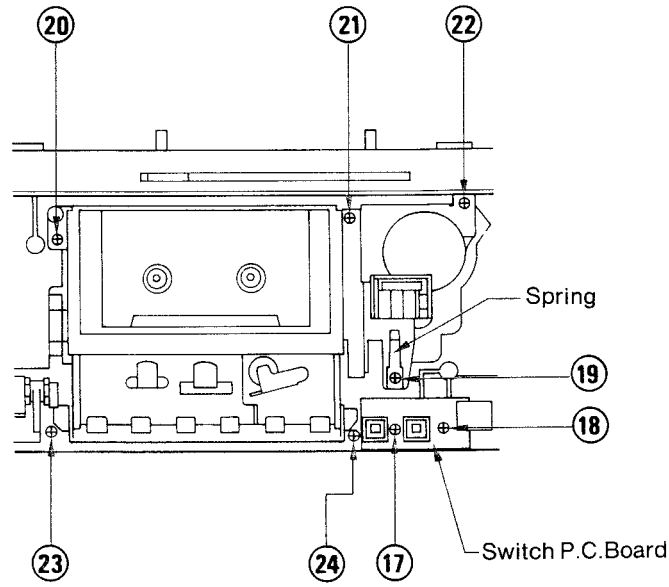
NOTE:
When the Radio Chassis is removed from the unit, be careful not to damage the Counter Reset Button and Dial Scale.

MECHANISM CHASSIS REMOVAL

1. Remove the Radio Chassis by following the instructions for it and detach the Switch P.C.Board by removing the two fastening screws (17 and 18).

2. Remove the fastening the screw (19) and detach the Spring.

3. Remove the five screws (20 ~ 24) fastening the Chassis and remove the Mechanism Chassis by lifting it, noting the lead arrangements.



4. Reassemble in reverse order.

MECHANICAL ADJUSTMENTS

EQUIPMENT REQUIRED

- Cassette-type Torquemeter (100g-cm/160g-cm)
- Silicone Grease (SHIN-ETSU SILICONE: KS-64)
- Round-nose Pliers
- Plus Screwdriver
- A Pair of Tweezers
- Paint or Glue
- Cassette Tape (C-120)

GENERAL REMARKS

1. When a repair or an adjustment work on the mechanism is performed, remove the Mechanism Chassis from the unit and supply 9V DC from the constant-voltage regulator to the Ext. Power Jack on the Amplifier P.C.Board.

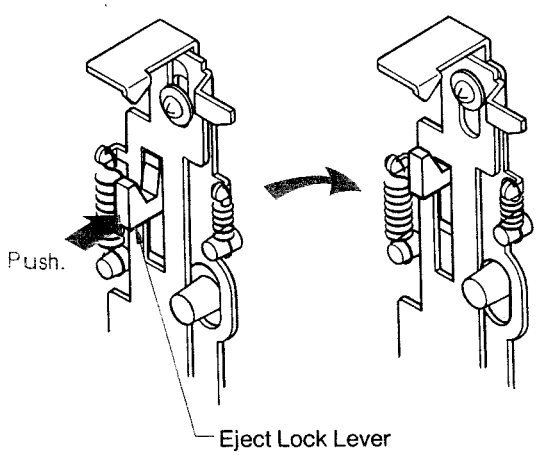
2. Before and after the mechanism adjustment, clean the tape contacting surfaces with a soft cloth soaked in alcohol.
   Trouble may occur because of oil and grease stains.
   The belts must be kept clean while the adjustments are performed.

3. Silicone grease (Example: SHIN-ETSU SILICONE KS-64) is applied to the Wind Belt to protect it from abrasion.
   If necessary, apply a little amount of silicone grease to the groove of the Fast Wind Gear.
   Then, rotate the motor, so that the grease flows into the belt.
   * If silicone grease other than the specified one or its equivalent is used, the melting of the belt may be caused.
   * Silicone grease is not applied to the Replacement Belts.

4. If the Pinch Roller or Belt has qualty deterioration such as scratches, replace it with a new one.

5. This Mechanism does not function when power is not supplied and any one of the buttons is pressed.

6. The Mechanism stops functioning soon when the cassette holder is opened and one of the select buttons (except for the Pause button) is pressed because the Eject Plate and the Lock Plate are locked by the Eject Lock Lever.
   If the Mechanism is required to function under this condition, push the Eject Lock Lever as illustrated, so that the Lever is released and the mechanism functions normally.

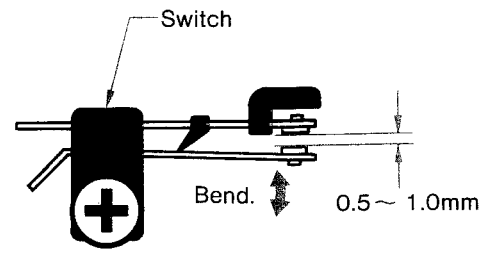


Position Adjustment of Leaf Switches

This model has the following eight leaf switches. Checking and adjustment for each switch shall be conducted in accordance with each adjusting items.
The unit should be set in the stop mode at each adjustment.

* Trigger Switch
* Motor Switch
* Pause Switch
* Play Switch
* Record Switch
* AMSS Switch
* Cue Switch
* Review Switch

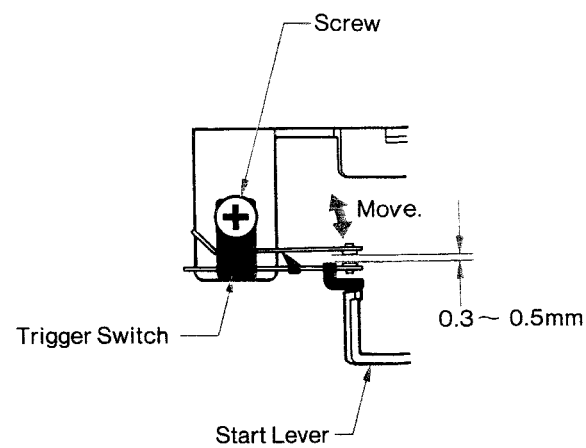
NOTE:
The clearance of the switch contacts should be 0.5 ~ 1.0mm when the Switch is not mounted on the unit. If not, adjust the clearance by carefully bending the contacts.



1. Trigger Switch

This Switch works as a trigger to make the mechanism function. When one of the select buttons (except for the Record button) is pressed, the Trigger Swich is turned on by the Start Lever, so that the Motor starts rotating. After that, this switch is turned off when the mechanism has completely finished its function.

* Check that the clearance of the switch contacts is 0.3 ~ 0.5mm with the Trigger Switch in contact with Start Lever as illustrated.

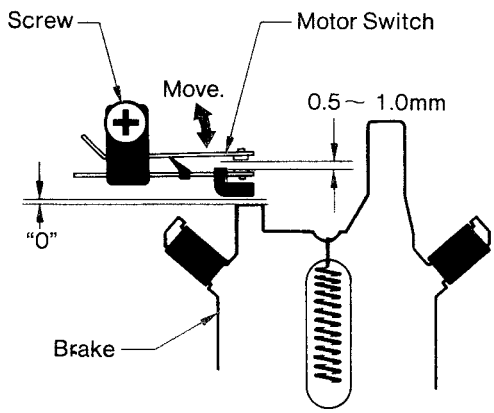


MECHANICAL ADJUSTMENTS (Continued)

2. Motor Switch

The driving motor rotates the Flywheel and the rotational force transfered by the Actuate Gear makes the mechanism function.
Then, the Motor Switch is turned on by the Brake.

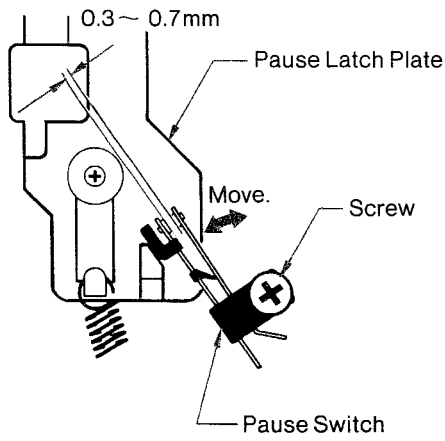
* Check that the clearance between the switch contacts is 0.5 ~ 1.0mm with the Motor Switch in contact with the Brake as illustrated.



3. Pause Switch

This Switch is used to light the LED which indicates the pause mode and is turned on or off by the Pause Latch Plate when the Pause button is pressed.

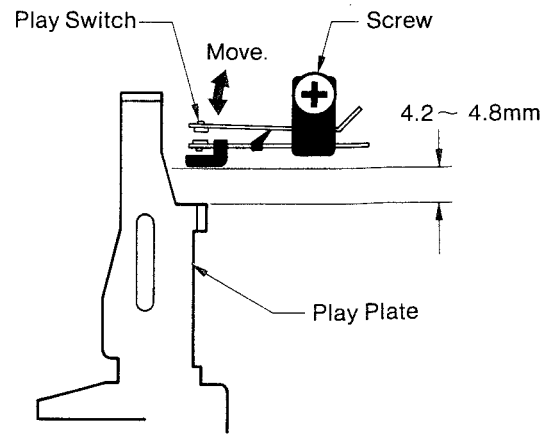
* Check that the clearance of the contacts is 0.3 ~ 0.7mm with the Pause Switch in contact with the Pause Latch Plate as illustrated.



4. Play Switch

This Switch is turned on by the Play Plate when the unit is set in the recording or playback mode, and it lights up the LED indicating the playback mode.

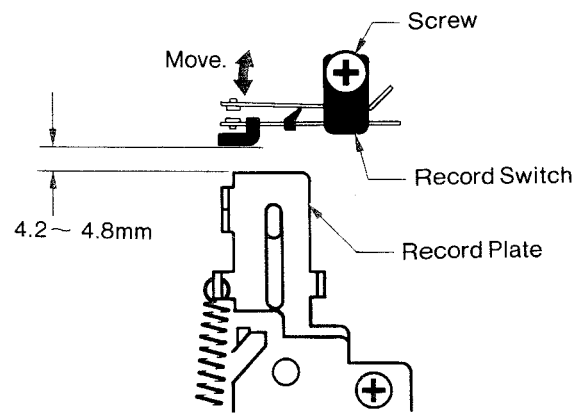
* Check that the clearance between the Play Switch and the Play Plate is 4.2~ 4.8mm as illustrated.



5. Record Switch

This Switch is turned on by the Record Plate when the unit is set in the recording mode, and it lights up the LED indicating the record mode.

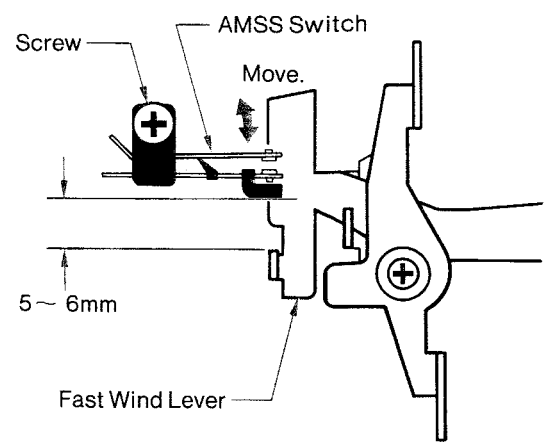
* Check that the clearance between the Record Switch and the Record Plate is 4.2~ 4.8mm as illustrated.



6. AMSS Switch

This Switch is turned on by the Fast Wind Lever when the unit is set in the cue or review mode by pressing the F.FWD or Rewind button in the playback mode. Then, the AMSS circuit is functioning.

* Check that the clearance between the AMSS Switch and the Fast Wind Lever is 5~ 6mm as illustrated.

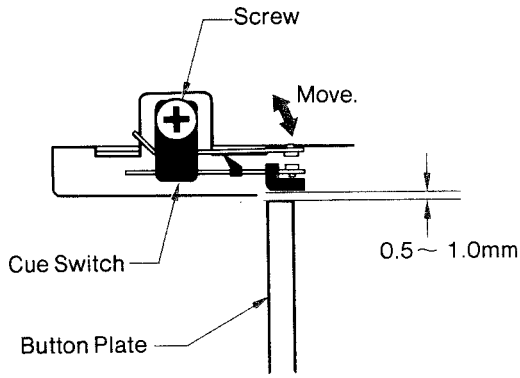


MECHANICAL ADJUSTMENTS (Continued)

7. Cue Switch

This Switch is kept on while pressed when the unit is set in the cue mode by pressing the F.FWD button in the playback mode. The solenoid keeps the unit in the cue mode as long as this switch is turned on.

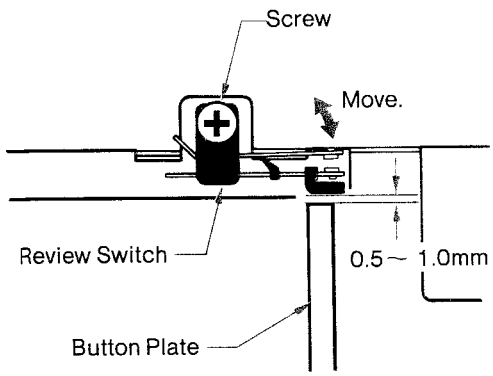
* Check that the clearance between the Cue Switch and the Button Plate is 0.5 ~ 1.0mm as illustrated.



8. Review Switch

This Switch is kept on while pressed when the unit is set in the review mode by pressing the Rewind button in the play-back mode. The Solenoid keeps the unit in the review mode as long as this switch is turned on.

* The clearance between the Review Switch and the Button Plate is 0.5 ~ 1.0mm as illustrated.



Switch Adjustment

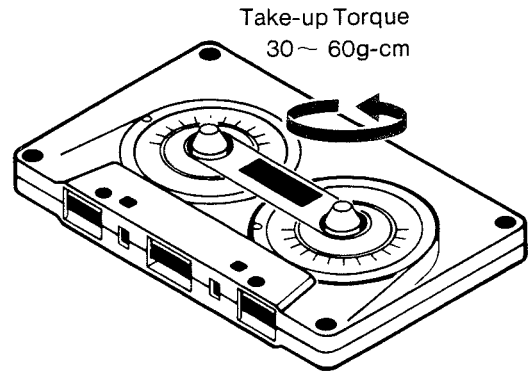
Loosen the screws fastening each switch and move the switches to the specified positions if position adjustments are required.

After adjustment, tighten the screws and secure the switches with paint or glue.

TAKE-UP TORQUE

1. Insert a cassette-type torquemeter (100g-cm) into the cassette compartment and set the unit in the playback mode. Then, check that the take-up torque is 30 ~ 60g-cm.

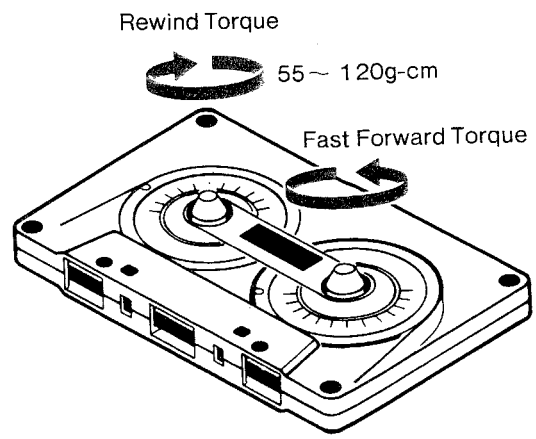
2. If not, replace the Friction with a new one.



Cassette-type Torquemeter

F.FWD AND REWIND TORQUES

1. Insert a cassette-type torquemeter (160g-cm) into the cassette compartment and measure the fast forward and rewind torquew. Check that each torque is 55 ~ 120g-cm.



2. If more than the specified torque is obtained, apply a little amount of silicone grease (Example: KS-64) into the groove of the belt engaged in the Fast Wind Gear, rotate the Fast Wind Gear, and apply silicone grease to the Wind Belt.

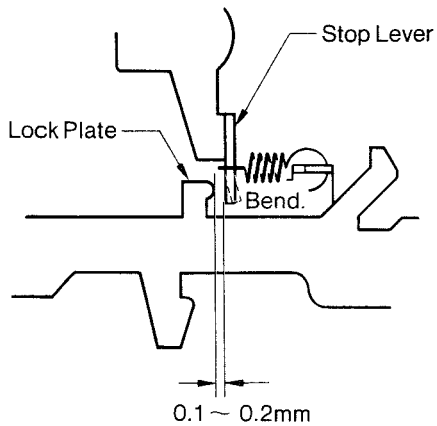
3. If less than the specified torque is obtained, replace the Wind Belt with a new one and apply a little amount of silicone grease (Example: KS-64) to the Wind Belt in the same manner as in item 2.

MECHANICAL ADJUSTMENTS (Continued)

Mulfunction of Automatic Shut-off Mechanism

1. If the unit is set in the stop mode while the tape is running, check that the clearance between the Stop Lever and the Lock Plate is 0.1 ~ 0.2mm as illustrated.

2. If necessary, adjust the clearance by bending the Stop Lever as illustrated.

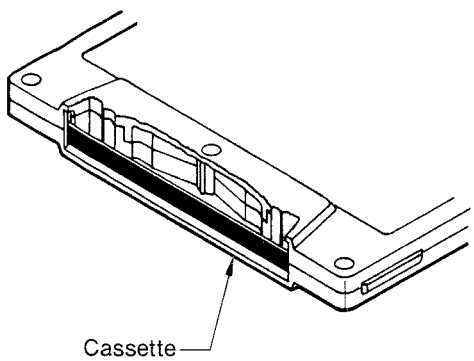


3. When the unit still mulfunctions after the above adjustment, replace the Take-up Reel with a new one.

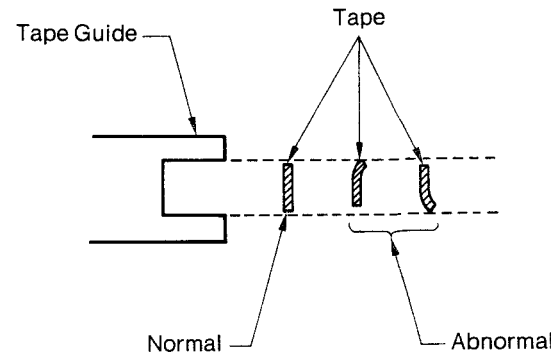
TAPE RUNNING CONDITION ADJUSTMENT

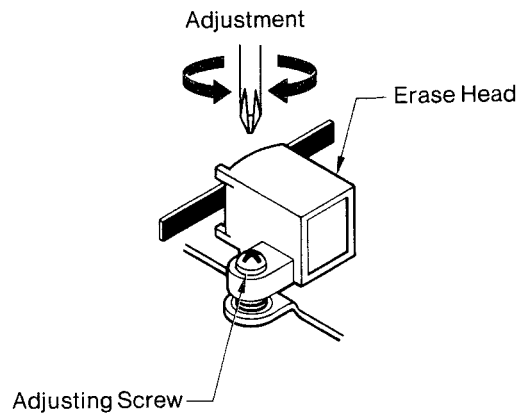
Whenever the Erase Head has been removed or replaced, perform the tape running condition adjustment as follows:

1. Cut the cassette half (Example: TDK C-120) as illustrated and use it for the adjustment.



2. Insert the cassette half into the cassette compartment. Then, turn the adjusting screw while the tape is running, so that the tape does not curl along the Tape Guide of the Erase Head as illustrated.





3. If necessary, adjust the screw until the tape is exactly centered in the Tape Guide of the Erase Head.

4. After the adjustment, secure the adjusting screw with paint or glue.

ELECTRICAL ADJUSTMENTS

EQUIPMENT REQUIRED

- VTVM (2 sets)
- Frequency Counter
- Audio Signal Generator
- Attenuator
- Dualtrace Synchroscope
- Dummy Load (47kΩ)
- DC Constant-voltage Regulator
- Test Tapes
  - * 3kHz Test Tape (Example: TEAC MTT-111) for Tape Speed Adjustment
  - * 10kHz Test Tape (Example: TEAC MTT-114) for Head Azimuth Adjustment
- Alignment Tool

Before the Electrical Adjustment, set the unit and measuring instruments as follows:

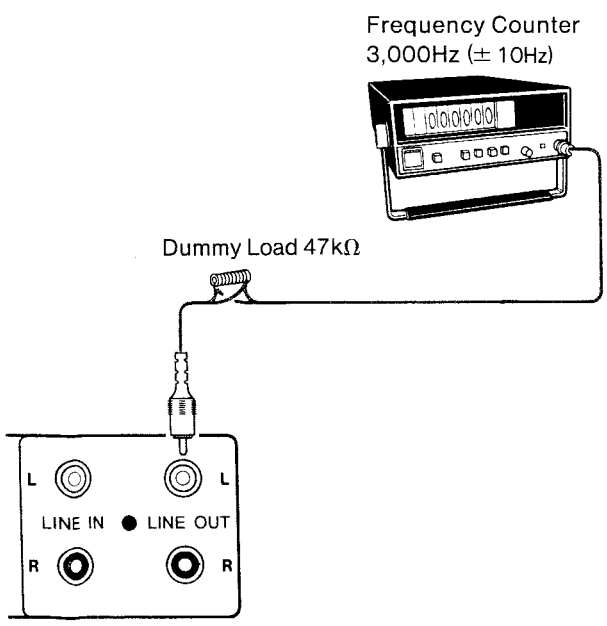
* Function Switch ..... TAPE
* Tape Select Switch ..... NORMAL
* Mode Switch ..... STEREO
* Beat Cancel Switch ..... position 1
* Volume Control ..... Center
* Balance Control ..... Center ["0"]
* Tone Controls ..... Center
* Audio Signal Generator Output 1kHz, 0dB (1V)
* Voltage Regulator Output 9V

NOTE:

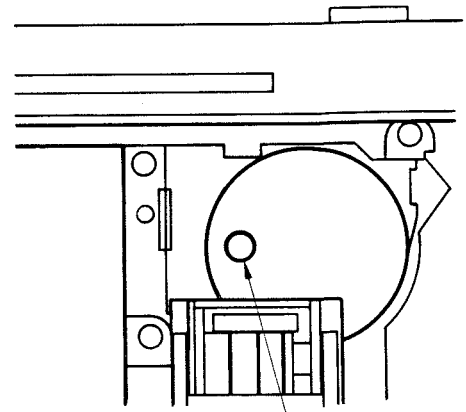
* Supply 9V DC to the unit from the Voltage Regulator at the adjustment.

TAPE SPEED ADJUSTMENT

1. Remove the Radio Chassis from the unit and connect the frequency counter to the left or right channel LINE OUT as illustrated. Then, insert a 3kHz test tape (Example: TEAC MTT-111) into the cassette compartment.



2. Adjust the tape speed by slowly turning the potentiometer inside the Motor until the frequency counter reads 3,000Hz (± 10Hz).

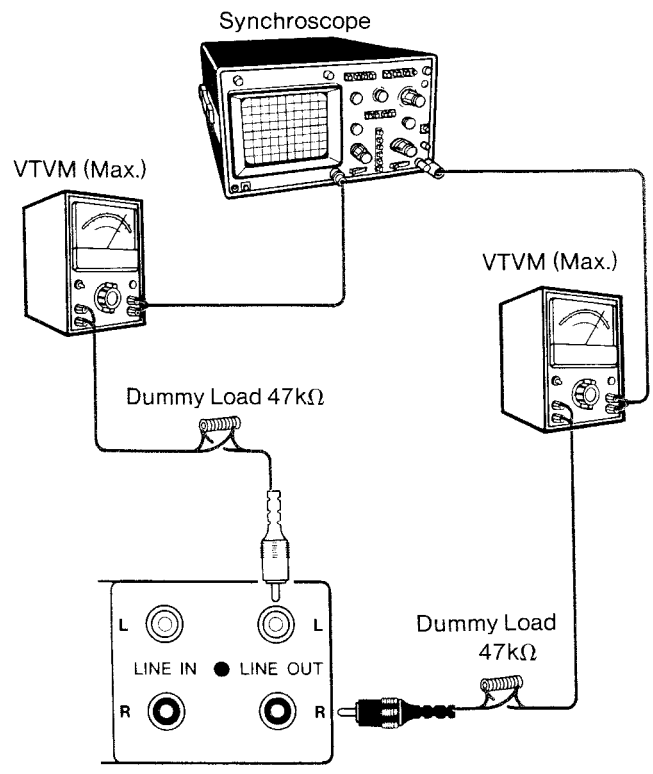


Potentiometer for Tape Speed Adjustment

HEAD AZIMUTH ADJUSTMENT

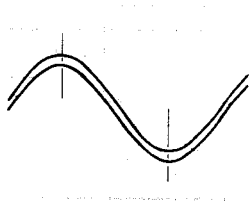
1. Detach the cassette compartment lid from the unit and connect the dualtrace synchroscope and the VTVM to both channel LINE OUT as illustrated.
   Then, set the dualtrace synchroscope as follows:
   * MODE ..... CHOP (chopped)
   * SOURCE ..... INT (internal), CH1 or CH2
   * SWEEP MODE ..... AUTO (automatic)

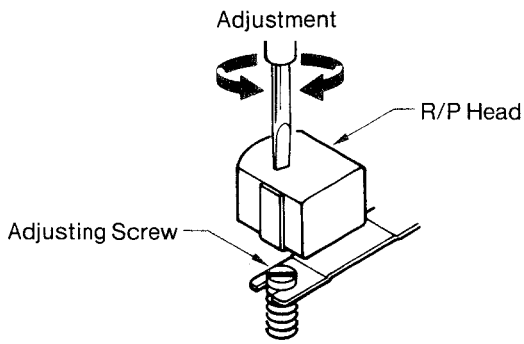
NOTE:
Adjust the field on the synchroscope with the VOLT. ADJ. and TIME ADJ.



ELECTRICAL ADJUSTMENTS (Continued)

2. Insert a 10kHz test tape (Example: TEAC MTT-114) into the cassette compartment. While playing back the test tape, turn the azimuth adjusting screw until the wave forms of the right and left channels are superimposed and set to optimum at maximum reading on the VTVM.



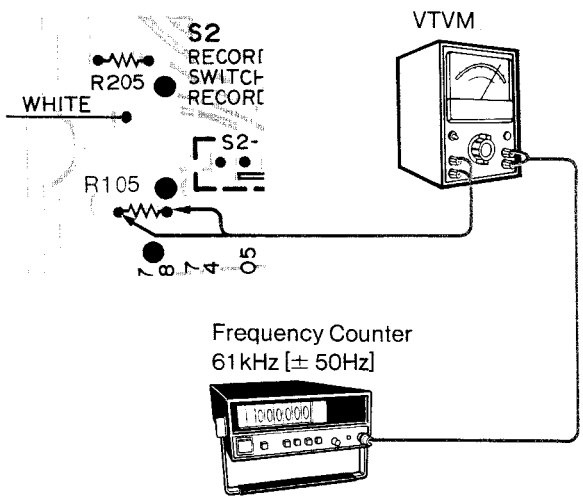


3. After the adjustment, secure the adjusting screw with paint or glue.

OSCILLATION FREQUENCY AND RECORDING BIAS ADJUSTMENT

LEFT CHANNEL

1. Connect the VTVM across the resistor R105 and the frequecy counter to the output terminal of the VTVM as illustrated.



2. Insert a cassette tape into the cassette compartment and set the unit in the recording mode.

3. Turn the core of the oscillation transformer (T301) with an alignment tool until the frequency counter reads 61kHz [± 50Hz].

4. Set the Tape Select Switch to "METAL" and adjust the potentiometer (P101) until the VTVM reads 8mV ± 0.3mV [800μA ± 30μA] with the unit in the recording mode.

RIGHT CHANNEL

Connect the VTVM across the resistor R205 and adjust the potentiometer (P201) by following the same procedure as in LEFT CHANNEL until the VTVM reads 8mV ± 0.3mV [800μA ± 30μA] with the unit in the recording mode.

TUNER ADJUSTMENT

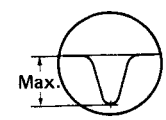
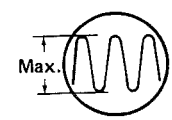
EQUIPMENT REQUIRED

- AM Standard Signal Generator
- FM Standard Signal Generator
- Generator Scope
- Loop Antenna
- Dummy Antenna (30Ω /10pF) for SW
- Dummy Antenna (75Ω , balanced type) for FM
- VTVM
- Frequency Counter
- Oscilloscope
- Dummy Load (4Ω)
- Alignment Tool
- Before performing the adjustment, set the unit as follows:
  - * Function Switch ..... RADIO
  - * Mode Switch ..... MONO
  - * Tone Controls ..... Center
  - * Balance Control ..... Center ["0"]
  - * Volume Control ..... Center

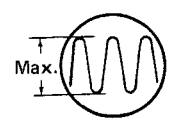
NOTE:
Use an alignment tool with plastic grip for all adjustments.

MW ALIGNMENT

Standard Test Frequency 400Hz and Modulation 30% at AM

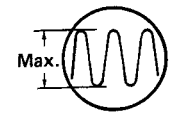
Step	Alignment	Connections		Frequency of Signal Generator	Tuning Dial Setting	Adjustments	Remarks
		INPUT	OUTPUT				
1	Calibration of IF for AM	Connect loop antenna to AM signal generator. Place loop antenna 60cm away from bar antenna.	Connect VTVM with 4Ω dummy load and oscilloscope to left or right channel Ext. speaker jack.	460kHz	High End	T6, T7 and T8	Obtain symmetrical curve and maximum amplitude. 
2	Calibration of Tuning Range			515kHz	Low End	T11	Obtain sine-wave of 400Hz and maximum amplitude. 
3				1,670kHz	High End	TC6	
4	Adjustment of Tracking			600kHz	600kHz	L2-2 (bar ant. coil)	
5				1,400kHz	1,400kHz	TC5	
6	Repeat the above steps until no further change is noted in any of the adjustments.						

LW ALIGNMENT

Step	Alignment	Connections		Frequency of Signal Generator	Tuning Dial Setting	Adjustments	Remarks
		INPUT	OUTPUT				
1	Calibration of Tuning Range	Connect loop antenna to AM signal generator. Place loop antenna 60cm away from bar antenna.	Connect VTVM with 4Ω dummy load and oscilloscope to left or right channel Ext. speaker jack.	145kHz	Low End	T12	Obtain sine-wave of 400Hz and maximum amplitude. 
2				365kHz	High End	TC8	
3	Adjustment of Tracking			170kHz	170kHz	L2-1 (bar ant. coil)	
4				310kHz	310kHz	TC7	
5	Repeat the above steps until no further change is noted in any of the adjustments.						

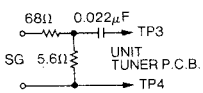
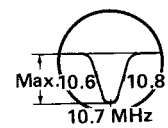
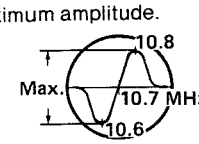
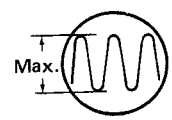
TUNER ADJUSTMENT (Continued)

SW ALIGNMENT

Step	Alignment	Connections		Frequency of Signal Generator	Tuning Dial Setting	Adjustments	Remarks
		INPUT	OUTPUT				
1	Calibration of Tuning Range	Connect AM signal generator to antenna terminals (TP1 and TP2) through dummy antenna (30Ω /10pF).	Connect VTVM with 4Ω dummy load and oscilloscope to left or right channel Ext. speaker jack.	5.7MHz	Low End	T10	Obtain sine-wave of 400Hz and maximum amplitude. 
2				18.7MHz	High End	TC4	
3	Adjustment of Tracking			6.5MHz	6.5MHz	T9	
4				17.0MHz	17.0MHz	TC3	
5	Repeat the above steps until no further change is noted in any of the adjustments.						

FM ALIGNMENT

Standard test frequency 400Hz and deviation 22.5kHz

Step	Alignment	Connections		Frequency of Signal Generator	Tuning Dial Setting	Adjustments	Remarks
		INPUT	OUTPUT				
1	Calibration of IF	Connect output of gene-scope to antenna terminals (TP1 and TP2) through dummy antenna (75Ω , balanced type). 	Connect input terminal of gene-scope to detector output terminals (CN1-1 or CN1-2, and CN1-3).	10.7MHz	Low End	Turn T5(blue core) fully counter-clockwise. Then, adjust T3 and T4.	Obtain symmetrical curve and maximum amplitude. 
2						T5 (blue core)	Obtain **S** curve and maximum amplitude. 
3	Calibration of Tuning Range	Connect FM signal generator to antenna terminals (TP1 and TP2) through dummy antenna (75Ω , balanced type).	Connect VTVM with 4Ω dummy load and oscilloscope to Ext. speaker jack.	87.4MHz		L1	Obtain sine-curve and maximum amplitude. 
4				108.25MHz	High End	TC2 (PVC)	
5	Adjustment of Tracking			90.0MHz	90MHz	T1	
6				106.0MHz	106MHz	TC1 (PVC)	
7	Repeat the above steps until no further change is noted in any of the adjustments.						

FM MPX (Multiplex) ADJUSTMENT

19kHz [V.C.O.] ADJUSTMENT

Before performing the adjustment, set the unit as follows:

- Function Select Switch ..... RADIO
- Band Select Switch ..... FM
- Mode Switch ..... STEREO

1. Connect the Frequency Counter to the twelfth pin (Test Point TP8) in IC2 (AN7410N).
2. Adjust the potentiometer (P1) until the oscillation frequency of IC2 becomes 19kHz (± 20Hz).

DIAL CORD STRINGING

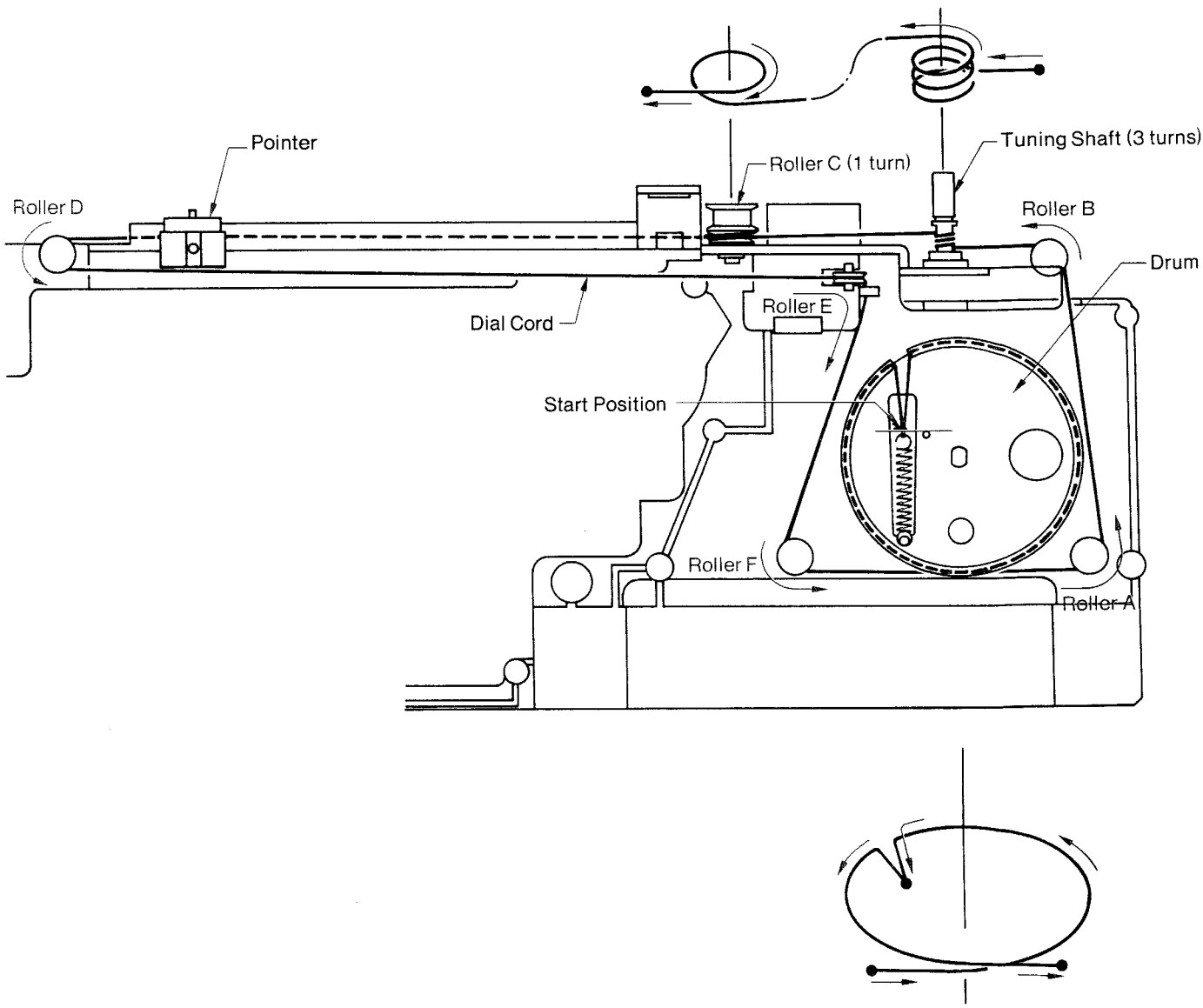
1. Tie the Dial Cord of length 1,200mm (effective length: 1,150mm) and diameter ϕ0.5 to the spring.
   Engage the Dial Cord as illustrated in the following order.
   Drum → Roller A → Roller B → Tuning Shaft (3 turns) → Roller C (1 turn) → Roller D → Roller E → Roller F → Drum → Spring

2. Hook the Dial Cord to the Spring and tie the Cord where the spring tip extends to the mark on the Drum. Then, secure the knot in the Dial Cord with paint or glue.

3. Turn the Tuning Shaft counterclockwise until it stops. First, attach the Pointer to the dial cord and then, set the Pointer to the mark on the Radio Chassis as illustrated.

4. Attach the Dial Scale to the Radio Chassis and set the Pointer to "0" on the Dial Scale as illustrated. Then, fix the Pointer there.

5. Apply white lacquer to the Pointer to secure.



PARTS LIST

Ref. No.	Part No.	Description	Q'ty
	PACKAGE		
	141 2 1719 20300	Handle	1
	141 6 1419 59704	Individual Carton	1
	141 6 1449 77200	Styrofoam Case, Left	1
	141 6 1449 77300	Styrofoam Case, Right	1
	141 6 2519 13990	Poly Cover	1
	141 6 2519 23033	Poly Cover 230 x 330	1
	141 6 3119 19300	Reinforce Handle	1
	141 6 3119 20800	PAD Front	1
	141 6 4559 00100	Serial No. Sheet	3
	ACCESSORIES		
	4 2419 72492	Cassette	1
⚠	4 2439 70310	Power Cord	1
	141 6 4729 07400	Caution Label	1
	141 6 4729 16700	Caution Label	1
	141 6 4729 35700	FTZ Notice	1
	142 6 4119 31538	Instruction Manual	1
	CABINET		
	4 2359 70990	RT Pin Socket	4
C150	CB1 0 5100 0000V	None-polar 1μF 10V	1
C250	CB1 0 5100 0000V	None-polar 1μF 10V	1
C330	CB4 7 4160 0000V	None-polar 0.47μF 16V	1
C332	CD1 0 7160 0001V	Electrolytic 100μF 16V	1
CA1	141 0 1249 21200	Cassette Lid Assy	1
CA2	141 2 1749 03100	Foot	2
CA3	141 2 2449 41400	Sheet, Select Button	1
CA4	141 0 1119 83505	Cabinet Top Assy	1
CA5	141 2 1149 27400	Net, Tweeter	2
CA6-1	4 1519 71192	Speaker (3.2Ω) [SP202]	1
CA6-2	4 1519 71191	Speaker (3.2Ω) [SP102]	1
CA7	141 2 1559 06000	Mike Grille	2
CA8	4 1539 70661	Microphone [BM101] & [BM201]	2
CA9	141 2 4469 40700	Cushion	1
CA10	141 2 1639 46600	Mixing Knob	1
CA11	141 2 1649 17800	Tone Knob	2
CA12	141 2 4469 40800	Cushion	1
CA13	141 2 1649 17900	Balance Knob	1
CA14	141 2 1649 17700	Volume Knob	1
CA15	141 2 1639 46700	Tuning Knob	1
CA16	141 2 1659 00500	AMSS Knob	1
CA17	4 1329 77691	AMSS Control P.C.B. Assy [**See PCB3**]	1
CA18	141 2 3529 35000	Select Button Holder	1
CA19	141 2 2719 17300	Handle Holder	2
CA20	141 2 1659 00400	Select Button	6
CA21	141 2 1659 00300	Select Button, Stop/Play	2
CA22	141 2 3529 35100	Button Holder	1
CA23	4 1329 77660	Indicator P.C.B. Assy [**See PCB 11**]	1
CA24	141 2 2629 04700	Button Bracket	1
CA25	141 2 1659 00200	Select Button, Eject	1
CA26	141 2 2449 39800	Sheet, Speaker	4
CA27	141 2 1149 27300	Net, Woofer	2
CA28	4 1519 71180	Speaker (3.2Ω) [SP101] & [SP201]	2
CA29	141 2 3729 00801	Speaker Fix Bracket	5
CA30	141 2 4729 04100	Lug	1
CA31	141 2 4469 27000	Cushion	1
CA32	141 2 4569 05100	Ring	1
CA33	141 2 2149 10200	Ribbon	1
CA34	141 2 1339 27000	Battery Lid	1
CA35	141 0 1119 83606	Cabinet Bottom Assy	1
CA36	141 2 4219 09800	Screw	5
CA37	4 2449 70253	Rod Antenna	2
CA38	4 2379 70650	Terminal Ring	2
CA39	141 2 3229 36100	Shield, Speaker	1
CA40	141 2 3729 02000	Speaker Bracket	1
CA41	141 0 1719 10000	Handle Assy	1
CX1	101 3 1302 60814	Screw, Pan Hd. +M2.6x8	2
CX2	103 3 1302 60611	Screw, Pan Hd. Tapping-2 +M2.6x6	1
CX3	103 3 1302 60811	Screw, Pan Hd. Tapping-2 +M2.6x8	5
CX4	103 3 1303 00511	Screw, Pan Hd. Tapping-2 +M3.0x5	4
CX5	103 3 1303 00811	Screw, Pan Hd. Tapping-2 +M3.0x8	6
CX6	103 3 1303 01018	Screw, Pan Hd. Tapping-2 +M3.0x10	4
CX7	103 3 1702 60811	Screw, Bind Hd. Tapping-2 +M2.6x8	2
	RADIO CHASSIS		
	4 2359 70990	RT Pin Socket	2
	4 2439 71580	Lead	1
CN11	4 2359 75564	Connector 4P Assy	1
DC1	141 2 3119 16500	Radio Chassis	1
DC2	141 2 8259 05900	Dial Roller	2
DC3	141 2 5519 03300	Dial Roller A	3
DC4	141 2 4219 14000	Screw	3
DC5	4 2029 71920	LED, LP2RN (FM Stereo) [D11]	1
DC6	4 2269 36350	PCB, LED	1
DC7	202 5 8200 20213	LED, SLP202C (Tuning) [D12]	1
DC8	141 2 5119 06600	Pointer, LED	1
DC9	628 3 0912 00000	String, φ0.5	1
DC10	141 2 1519 33600	Back Plate, Pointer	1
DC11	141 2 1519 33405	Dial Plate	1
DC12	141 2 2899 23200	Adhesive Sheet, Meter	1
DC13	4 5119 70771	LED Indicator P.C.B. Assy [**See PCB9**]	1
DC14	141 2 4729 04100	Lug	2
DC15	141 2 8539 47400	Spring, Reset Counter	1
DC16	4 1329 78160	Switch P.C.B. Assy [**See PCB8**]	1
DC17	141 0 7519 00101	Dial Shaft Assy	1
DC18	141 2 3829 18000	Spring, Terminal	1
DC19	141 2 3829 19900	Spring, Battery	1
DC20	141 2 3829 09400	Terminal Battery, Anode	1
DC21	141 2 8259 10700	Dial Roller	1
DC22	141 2 4179 00700	Nut, Dial Shaft	1
DC23	4 2249 70560	Fine Tuner	1
DC24	141 2 1639 46500	Knob, Fine Tuning	1
DC25	141 2 8519 73900	Spring, Play	1
DC26	141 2 5389 03400	Drum	1
DC27	4 2319 71990	Slide Switch (Beat Cancel) [S17]	1
DC28	4 1919 71542	Power Supply P.C.B. Assy [**See PCB7**]	1
DC29	141 2 4219 10400	Poly Wave Screw	2
DC30	⚠ 4 2519 73611	Power Trans [T302]	1
DC31	⚠ 4 2319 72130	Slide Switch (Voltage Select) [S18]	1
DC33	4 1329 77680	Mixing Amplifier P.C.B. Assy [**See PCB4**]	1
DC34	141 2 7419 79200	Switch Lever	3
DC35	141 2 1629 06000	Switch Lever Knob	3
DC36	141 2 3529 08600	Spacer, Record Lock	6
DC37	141 2 7319 52400	Slide Plate Switch	1
DC38	141 2 7319 52500	Slide Plate Switch	2
DC39	4 1329 77651	Amplifier P.C.B. Assy [**See PCB1**]	1
DC40	4 1329 77710	Jack P.C.B. Assy [**See PCB6**]	1
DC41	4 1259 71582	Radio Tuner P.C.B. Assy [**See PCB2**]	1
DC42	141 2 3229 36200	Shield, Volume	1
DC43	4 1329 77702	Volume Control P.C.B. Assy [**See PCB5**]	1
DC44	141 2 1629 06100	Band Select Knob	1
DC45	141 2 6219 03500	Band Switch Lever	1
DC46	141 2 8259 04800	Ball	2
DC47	141 2 8559 03500	Spring	1

PARTS LIST (Continued)

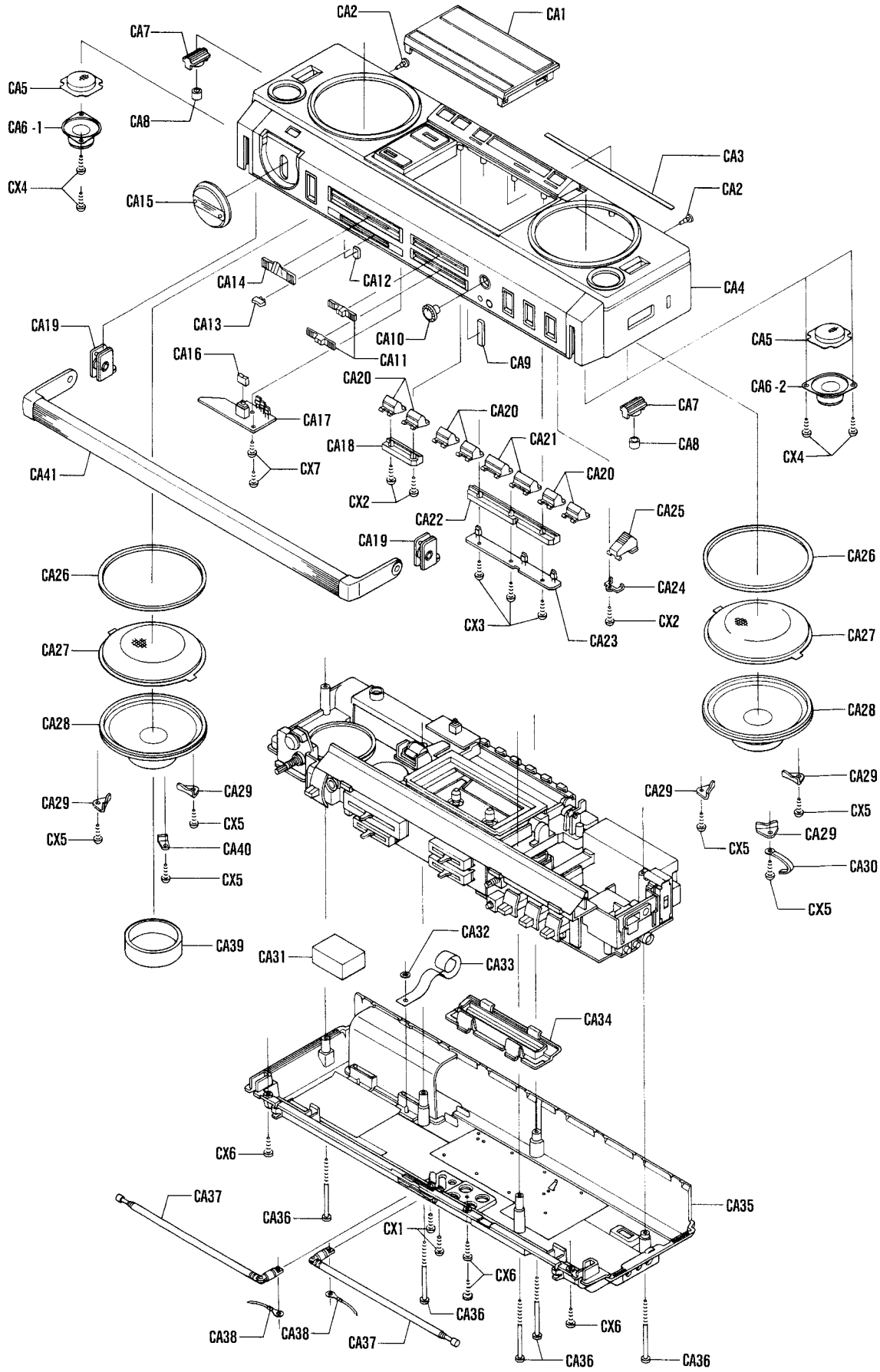
Ref. No.	Part No.	Description		Q'ty
DC48	141 2 7519 42200	Shaft, Switch Lever		1
DC49	141 2 6229 01100	Bracket, Band Switch		1
DY1	101 3 1302 60618	Screw, Pan Hd.	+M2.6x6	10
DY2	101 3 1702 00418	Screw, Bind Hd.	+M2.0x4	3
DY3	101 3 1703 00518	Screw, Bind Hd.	+M3.0x5	1
DY4	101 3 1703 00600	Screw, Bind Hd.	+M3.0x6	2
DY5	103 3 1302 60611	Screw, Pan Hd. Tapping-2	+M2.6x6	1
DY6	103 3 1303 00811	Screw, Pan Hd. Tapping-2	+M3.0x8	8
DY7	103 3 1303 01011	Screw, Pan Hd. Tapping-2	+M3.0x10	3
DY8	103 3 1303 02011	Screw, Pan Hd. Tapping-2	+M3.0x20	4
DY9	103 3 1303 01419	Screw, Pan Hd. Tapping-2	+M3.0x14	1
DY10	103 3 1703 00811	Screw, Bind Hd. Tapping-2	+M3.0x8	5
DY11	112 3 1302 00012	E Ring	M2.0	1
DY12	112 3 1304 00012	E Ring	M4.0	1

NOTES:
1. Parts order must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

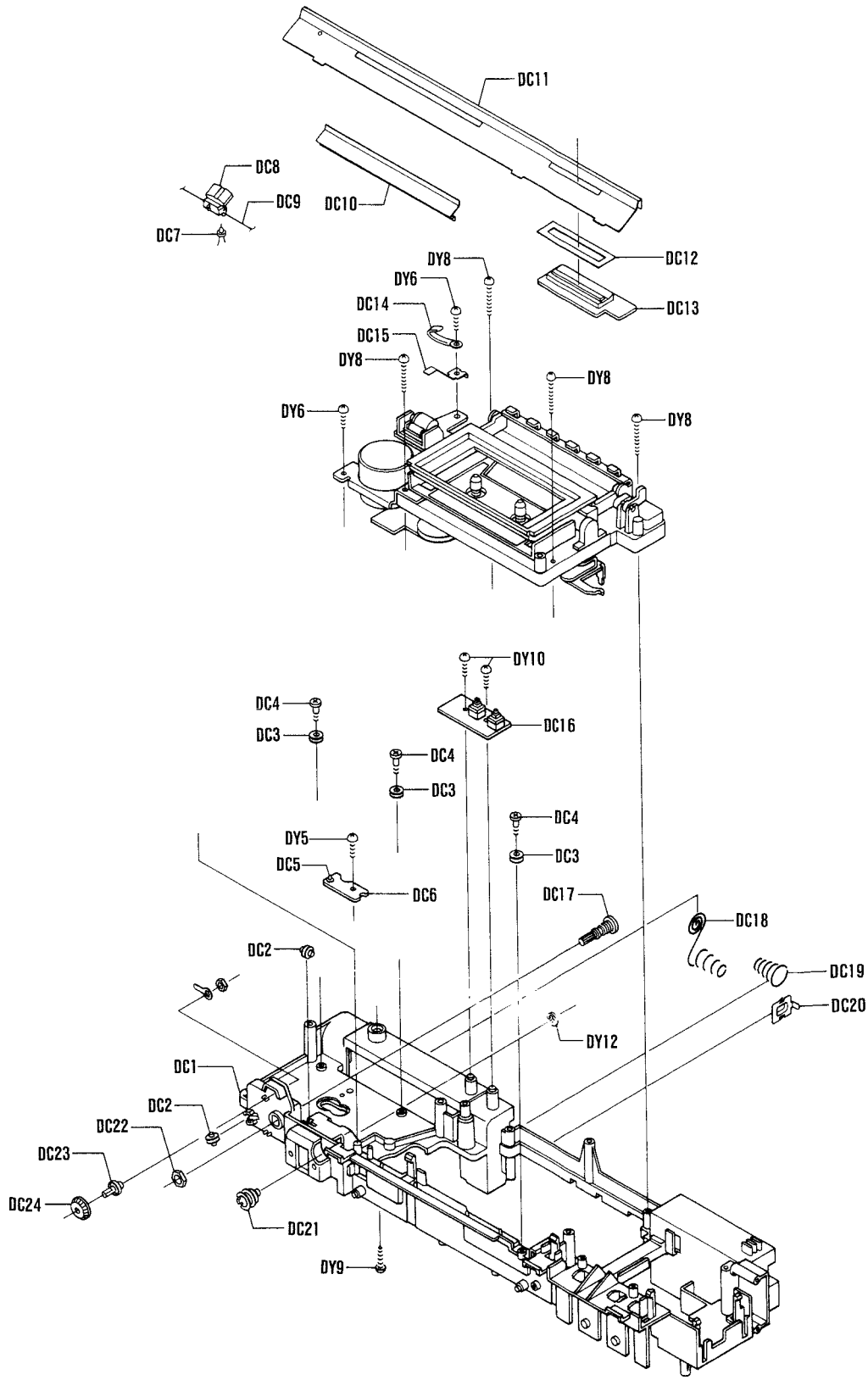
PRODUCT SAFETY NOTICE

PRODUCT SAFETY SHOULD BE CONSIDERED WHEN A COMPONENT REPLACEMENT IS MADE IN ANY AREA OF AN UNIT. COMPONENTS INDICATED BY A MARK ⚠ IN THIS PARTS LIST AND THE SCHEMATIC DIAGRAM SHOW COMPONENTS WHOSE VALUE HAS SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. IT IS PARTICULARLY RECOMMENDED THAT ONLY PARTS SPECIFIED ON THE FOLLOWING PARTS LIST BE USED FOR COMPONENT REPLACEMENT POINTED OUT BY THE MARK.

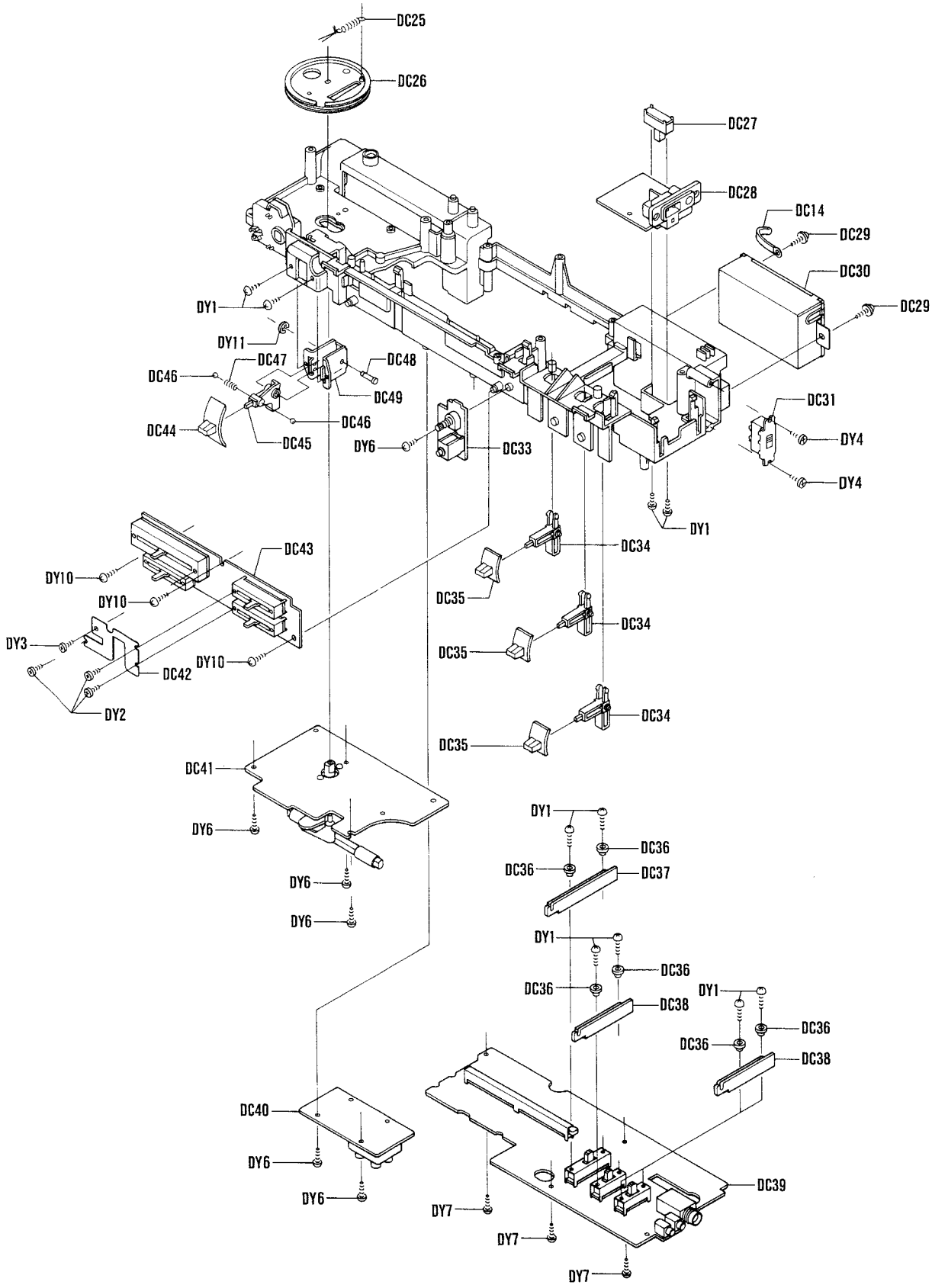
CABINET EXPLODED VIEW



CABINET EXPLODED VIEW (Continued)



CABINET EXPLODED VIEW (Continued)



MECHANISM PARTS LIST

Ref. No.	Part No.	Description	Q'ty
	MECHANISM		
MC1	141 2 8549 01700	Spring, Cassette-up Lid	1
MC2	141 2 7419 71500	Eject Lever	1
MC3	141 2 8519 41300	Spring, Lock Lever	3
MC4	141 0 5519 07900	Eject Gear Assy	1
MC5	141 2 4729 04100	Lug	3
MC6	141 2 1149 22801	Compartment Cabinet	1
MC7	141 2 1249 25400	Cassette Lid Frame	1
MC8	141 2 1449 47201	Compartment Plate	1
MC9	141 2 1659 00100	Counter Reset Button	1
MC10	141 2 8119 10400	Counter	1
MC11	141 2 5649 07700	Counter Belt	1
MC12	141 2 5519 04400	Intermediate Pulley	1
MC13	141 0 3169 08100	Counter Bracket Assy	1
MC14-1	4 5279 71172	Motor Assy [M1]	1
MC14-2	141 2 3789 08800	Motor Bracket	1
MC15-1	141 2 4459 11800	Cushion Motor	3
MC15-2	141 2 3529 19900	Spacer, Motor	3
MC16	141 2 4219 28800	Screw	2
MC17	141 2 8549 01600	Spring, Cassette Lid Lock	1
MC18	141 2 7419 71400	Casssette Lid Lock	1
MC19	141 2 8549 11100	Spring, Cassette Lid Lock	1
MC20	4 2379 70650	Terminal Ring	1
MC21	141 2 6139 14100	Button Frame	1
MC22	141 2 7319 44700	Select Plate	1
MC23	141 2 8549 03400	Spring, Button Plate	5
MC24	141 2 1619 78301	Play Button Plate	2
MC25	141 2 1619 78401	F.FWD./REW Button Plate	2
MC26	141 2 8549 03401	Spring, Play Button	1
MC27	141 2 1619 78201	Stop Button Plate	2
MC28	141 2 4539 06900	Washer	1
MC29	141 2 4539 21000	Washer	2
MC30	141 2 3229 36600	Shield, Motor	1
MC31	141 2 4359 31000	Insulator, Motor	1
MC32	4 1329 77671	Terminal P.C.B. Assy **[See PCB 10]**	1
MC33	141 2 4469 00500	Flywheel Thrust	1
MC34	141 2 3519 59800	Flywheel Support	1
MC35	4 2319 74360	Leaf Switch (Record) [S9]	1
MC35	4 2319 74360	Leaf Switch (Pause) [S10]	1
MC35	4 2319 74360	Leaf Switch (Play) [S11]	1
MC35	4 2319 74360	Leaf Switch (F.FWD./REW) [S12]	1
MC35	4 2319 74360	Leaf Switch (CUE) [S13]	1
MC35	4 2319 74360	Leaf Switch (Review) [S14]	1
MC35	4 2319 74360	Leaf Switch (Motor) [S16]	1
MC36	4 2319 74362	Leaf Switch (Trigger) [S15]	1
MC37	141 2 5649 19400	Drive Belt	1
MC38	141 2 5219 14100	Flywheel Capstan	1
MC39	141 2 5519 44600	Flywheel Gear	1
MC40	141 2 5519 39000	Actuate Gear	1
MC41	141 2 8259 09000	Spacer, Button Lock	2
MC42	141 2 8549 07400	Spring, Button Lock	1
MC43	141 2 8549 01200	Spring, Rewind Arm	2
MC44	141 2 7319 44200	Button Lock Plate	1
MC45	141 2 8519 19300	Spring, Brake	1
MC46	141 2 4219 23000	Screw	2
MC47	141 2 8259 08900	Roller Plate	2
MC48	141 0 7319 22200	Power Plate Assy	1
MC49	141 2 8549 02200	Spring, Start	1
MC50	141 0 3119 19301	Chassis Assy	1
MC51	141 2 8549 01300	Spring, Record Stop	1
MC52	141 2 7419 71000	Stop Button Plate Lever	1
MC53	141 2 8549 00700	Spring, Brake	3
MC54	141 2 7419 71300	Record Stop Lever	1
MC55	141 2 8549 04400	Spring, Interlock	2

Ref. No.	Part No.	Description	Q'ty
MC56	141 2 8429 05700	Interlock Plate	1
MC57	141 2 7319 44800	Eject Plate	1
MC58	141 2 4219 13201	Screw w/Washer	5
MC59	141 2 8539 41300	Spring, Eject Plate	1
MC60	141 2 4729 03600	Lug	2
MC61	4 2429 71990	Erase Head [HD2]	1
MC62	141 2 8559 00200	Spring, Erase Head	1
MC63	4 2429 71674	R/P Head [HD1]	1
MC64	141 2 8519 74300	Spring, Azimuth	1
MC65	141 2 8539 39800	Spring, Base	1
MC66	141 2 5519 38200	Idler Gear	1
MC67	141 2 5319 10300	Supply Reel Gear	1
MC68	141 2 8519 67901	Spring, Supply Reel	1
MC69	141 2 5319 07000	Reel Fin	1
MC70	141 2 4539 27100	Washer	1
MC71	141 2 5369 00400	Cap, Reel Plate	2
MC72	141 0 5319 05700	Take-up Reel Assy	1
MC73	141 2 4219 24700	Screw, Pan Hd. +M2.6x12	5
MC74	141 2 8549 01100	Spring, Take-up Arm	1
MC75	141 2 8549 01400	Spring, Pause ASO	1
MC76	141 0 7439 09600	Take-up Arm Assy	1
MC77	141 2 7419 72700	ASO Stop Lever	1
MC78	141 0 5419 02400	Pinch Roller Assy	1
MC79	141 2 8549 01500	Spring, Pinch Roller	1
MC80	141 2 4219 05400	Screw w/Washer	2
MC81	141 2 7319 44100	Slide Base	1
MC82	141 2 4459 25800	Brake Cover	2
MC83	141 2 7149 05000	Brake	1
MC84	141 2 7419 71600	Pause Lever	1
MC85	141 2 8519 39300	Spring, Slide Base	1
MC86	141 2 7319 44600	Pause Latch Plate	1
MC87	141 2 8539 39700	Spring, Cassette	1
MC88	141 2 5519 38600	Take-up Gear	1
MC89	141 2 8549 01800	Spring, Pause Lock	1
MC90	141 2 7539 00500	Pin	6
MC91	141 2 8549 00500	Spring, Pin	6
MC92	141 2 7319 43700	Stop Plate	1
MC93	141 2 8549 00800	Spring, Plate	3
MC94	141 2 7319 43601	Fast Wind Plate	1
MC95	141 2 8549 07500	Spring, F.FWD. Plate	1
MC96	141 2 7319 43500	Pause Plate	1
MC97	141 2 6139 14200	Frame Plate	1
MC98	141 2 7319 44300	Lock Plate	1
MC99	141 2 7319 44400	Control Plate	1
MC100	141 2 7419 70900	Lock Lever Plate	1
MC101	141 2 7419 70500	Start Lever	1
MC102	141 2 8549 02000	Spring, Start Lever	1
MC103	141 2 8549 05701	Spring, Stop Lever	1
MC104	141 2 7419 70600	Stop Lever	1
MC105	141 2 7419 71100	ASO Lever	1
MC106	141 2 5519 38900	ASO Gear	1
MC107	141 0 5519 09300	Friction Assy	1
MC108	141 2 5649 16900	ASO Belt	1
MC109	141 0 7439 09500	Rewind Arm Assy	1
MC110	141 2 5519 38800	Idler Pulley Gear	1
MC111	141 2 5649 16800	Wind Belt	1
MC112	141 2 5519 38700	Fast Wind Gear	1
MC113	141 0 7419 28700	Fast Wind Lever Assy	1
MC114	141 2 7419 70700	Review Lever	1
MC115	141 2 7419 71200	Lever Eject Lock	1
MC116	4 2649 70343	Solenoid (AMSS) [SL1]	1
MC117	141 0 8419 04700	Record Lever Assy	1
MC118	141 2 8549 00900	Spring, Play Plate	1
MC119	141 2 8549 01900	Spring, Slide Base	1

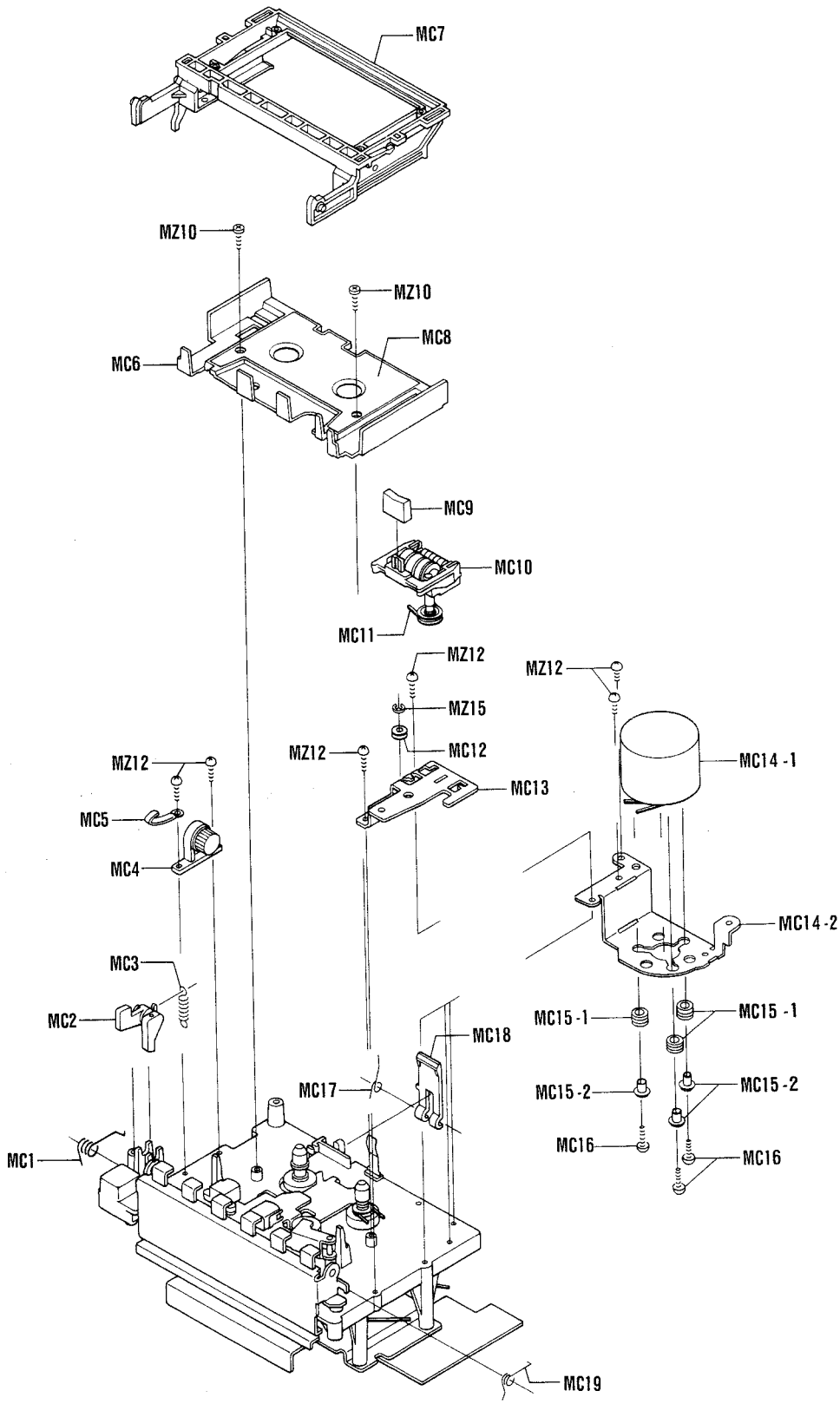
MECHANISM PARTS LIST (Continued)

Ref. No.	Part No.	Description		Q'ty
MC120	141 2 7319 43800	Play Plate		1
MC121	141 2 7319 43901	Rewind Plate		1
MC122	141 2 8549 01000	Spring, Record Plate		1
MC123	141 2 7319 44001	Recrod Plate		1
MC124	141 2 8549 02100	Spring, Control Plate		1
MZ1	101 3 1302 00311	Screw, Pan Hd.	+M2.0x3	2
MZ2	101 3 1702 00411	Screw, Bind Hd.	+M2.0x4	1
MZ3	101 3 1702 00811	Screw, Bind Hd.	+M2.0x8	1
MZ4	101 3 2502 01011	Screw, Cyllinder Hd.	-M2.0x10	1
MZ5	103 3 1302 00611	Screw, Pan Hd. Tapping-2	+M2.0x6	2
MZ6	103 3 1302 01011	Screw, Pan Hd. Tapping-2	+M2.0x10	1
MZ7	103 3 1302 60611	Screw, Pan Hd. Tapping-2	+M2.6x6	2
MZ8	103 3 1302 61011	Screw, Pan Hd. Tapping-2	+M2.6x10	3
MZ9	103 3 1702 00711	Screw, Bind Hd. Tapping-2	+M2.0x7	1
MZ10	103 3 1702 00818	Screw, Bind Hd. Tapping-2	+M2.0x8	2
MZ11	143 3 1302 60611	Screw, Pan Hd. Tapping-B	+M2.6x6	4
MZ12	143 3 1302 60811	Screw, Pan Hd. Tapping-B	+M2.6x8	9
MZ13	143 3 1702 60818	Screw, Bind Hd. Tapping-B	+M2.6x8	5
MZ14	112 3 1301 50082	E Ring	M1.5	8
MZ15	112 3 1302 00082	E Ring	M2.0	3
MZ16	110 3 1202 00013	Finished Washer	M2.0	1
MZ17	110 3 9210 50024	Nylon Washer	M2.1x5.0x0.2	4
MZ18	110 3 9260 70025	Mylar Washer	M2.6x7.0x0.2	2
MZ19	110 3 9310 60025	Mylar Washer	M3.1x6.0x0.2	1

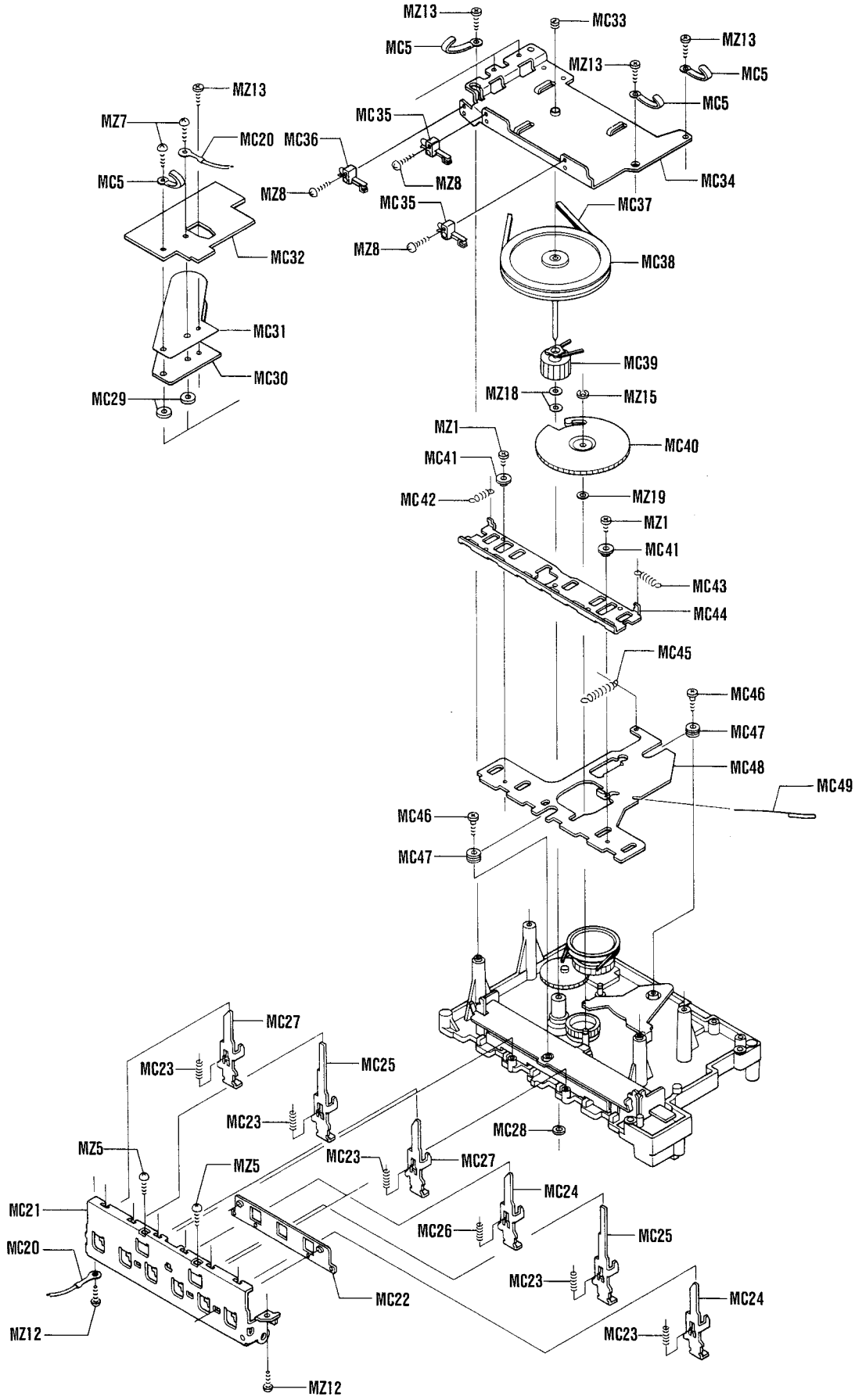
NOTES:

1. Parts order must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

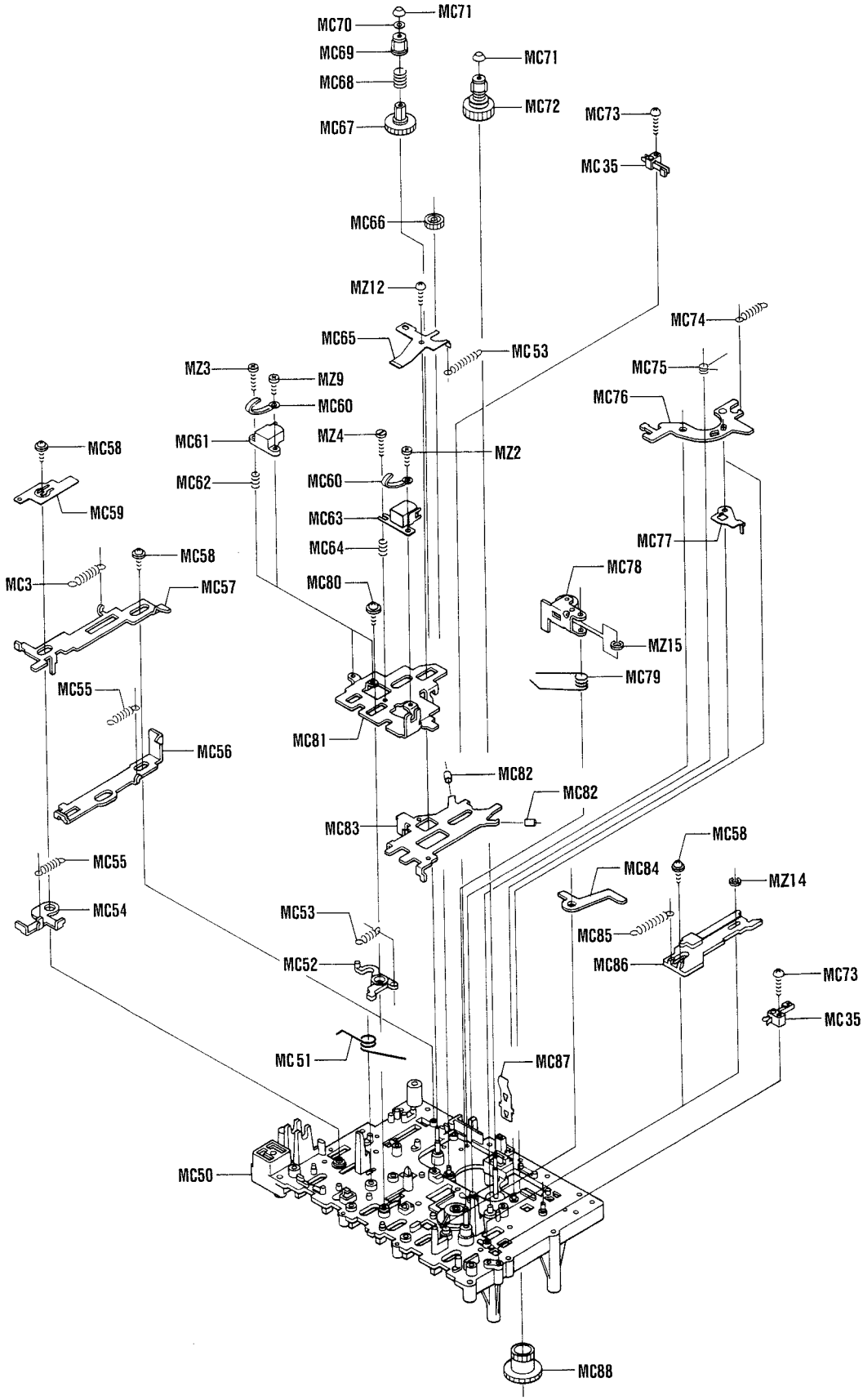
MECHANISM EXPLODED VIEW



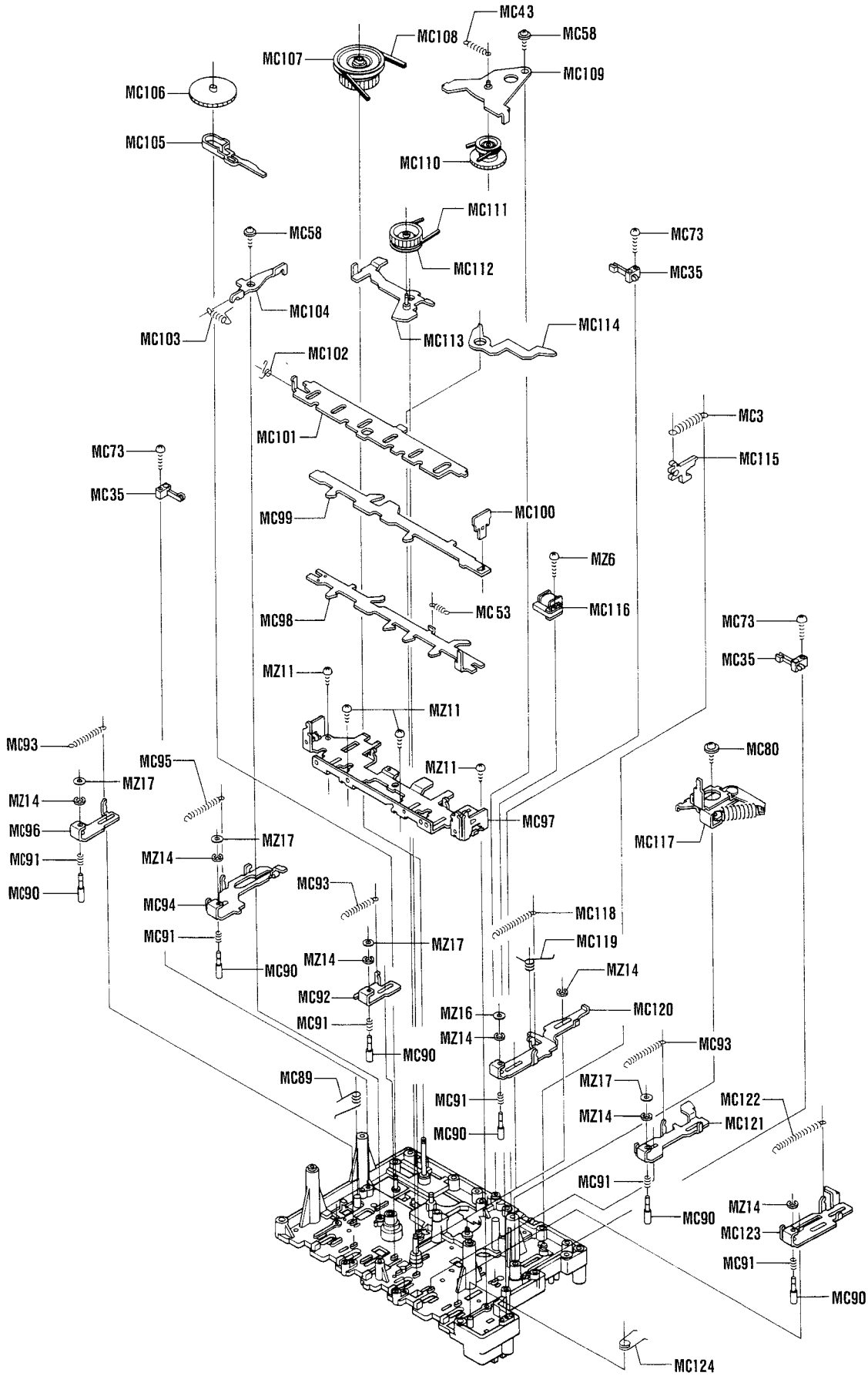
MECHANISM EXPLODED VIEW (Continued)



MECHANISM EXPLODED VIEW (Continued)



MECHANISM EXPLODED VIEW (Continued)



P.C.BOARD PARTS LIST

Ref. No.	Part No.	Description	Q'ty
	AMPLIFIER P.C.B. ASSY		
PCB1	4 1329 77651	Amplifier P.C.B. Assy	1
	141 2 4729 05000	Staple, 5mm	13
	141 2 4729 04700	Staple, 10mm	2
S2	4 2319 73903	Slide Switch (Record/Play)	1
S3	4 2319 75430	Slide Switch (Function)	1
S4	4 2319 72810	Slide Switch (Tape Select)	1
S5	4 2319 72810	Slide Switch (Mode)	1
J4	4 2359 73470	1P Jack (Ext. Speaker, Left)	1
J5	4 2359 73470	1P Jack (Ext. Speaker, Right)	1
J6	4 2359 75380	1P Jack (Headphones)	1
CN4	4 2359 75660	Connector 5P Assy	1
CN5	4 2359 75562	Connector 4P Assy	1
CN10	4 2359 75543	Connector 6P Assy	1
CN12	4 2369 70740	RT Pin	1
CN13	4 2369 70740	RT Pin	1
L101	4 2559 70130	Coil (33mH)	1
L201	4 2559 70130	Coil (33mH)	1
L302	4 2539 70410	Choke Coil (500μH)	1
P101	4 2229 73300	Potentiometer (B-100kΩ)	1
P201	4 2229 73300	Potentiometer (B-100kΩ)	1
D102	202 5 9110 18820	Diode, 1S 188	1
D103	4 2029 71440	Diode, 1SS95	1
D202	202 5 9110 18820	Diode, 1S 188	1
D203	4 2029 71440	Diode, 1SS95	1
D303	4 2029 71440	Diode, 1SS95	1
D304	4 2029 71440	Diode, 1SS95	1
D305	4 2029 71440	Diode, 1SS95	1
D306	4 2029 71440	Diode, 1SS95	1
D307	4 2029 71440	Diode, 1SS95	1
D309	4 2029 71440	Diode, 1SS95	1
D312	202 5 3210 06811	Diode, GZA6.8 X	1
D314	202 5 3200 03311	Diode, GZA 3.3X	1
D316	202 5 9600 44610	Diode, DS 446	1
D318	4 2029 71440	Diode, 1SS95	1
D319	202 5 2450 13540	Diode, DS 135	1
IC301	4 2069 71360	IC, TA7658P	1
IC302	206 5 1624 18510	IC, LA4185	1
Q101	4 2039 70431	Transistor, 2SC 1815	1
Q102	4 2039 70431	Transistor, 2SC 1815	1
Q103	4 2039 70431	Transistor, 2SC 1815	1
Q104	4 2039 70431	Transistor, 2SC 1815	1
Q105	4 2039 70431	Transistor, 2SC 1815	1
Q106	203 5 4921 01270	Transistor, 2SD1012	1
Q201	4 2039 70431	Transistor, 2SC 1815	1
Q202	4 2039 70431	Transistor, 2SC 1815	1
Q203	4 2039 70431	Transistor, 2SC 1815	1
Q204	4 2039 70431	Transistor, 2SC 1815	1
Q205	4 2039 70431	Transistor, 2SC 1815	1
Q206	203 5 4921 01270	Transistor, 2SD1012	1
Q302	203 5 4921 01270	Transistor, 2SD1012	1
Q305	203 5 6900 40040	Transistor, 2SD400D	1
Q307	203 5 4570 73460	Transistor, 2SD 734	1
Q308	203 5 4570 73460	Transistor, 2SD 734	1
Q309	4 2039 70431	Transistor, 2SC 1815	1
C103	CM1 5 2500 K00SV	Mylar 0.0015μF 50V $\pm$10%	1
C104	CC8 2 1500 KE00C	Ceramic 820pF 50V $\pm$10%	1
C105	CC2 2 1500 KE00C	Ceramic 220pF 50V $\pm$10%	1
C106	CC2 2 0500 JD00C	Ceramic 22pF 50V $\pm$5%	1
C107	CC3 3 1500 KE00C	Ceramic 330pF 50V $\pm$10%	1
C108	CD3 3 6100 0001V	Electrolytic 33μF 10V	1
C109	CM1 0 3500 K00SV	Mylar 0.01μF 50V $\pm$10%	1
C110	CC2 2 1500 KE00C	Ceramic 220pF 50V $\pm$10%	1
C111	CD3 3 4100 0002V	Electrolytic 0.33μF 10V	1

Ref. No.	Part No.	Description	Q'ty
C112	CD4 7 4100 0002V	Electrolytic 0.47μF 10V	1
C113	CC2 2 3500 KE00C	Ceramic 0.022μF 50V $\pm$10%	1
C114	CD4 7 5100 0000V	Electrolytic 4.7μF 10V	1
C115	CM4 7 2500 K00MV	Mylar 0.0047μF 50V $\pm$10%	1
C116	CD1 0 6100 0001V	Electrolytic 10μF 10V	1
C117	CM1 8 3500 K00SV	Mylar 0.018μF 50V $\pm$10%	1
C118	CC4 7 2500 KE00C	Ceramic 0.0047μF 50V $\pm$10%	1
C121	CM1 8 3500 K00SV	Mylar 0.018μF 50V $\pm$10%	1
C122	CM1 5 2500 K00SV	Mylar 0.0015μF 50V $\pm$10%	1
C123	CM6 8 2500 K00MV	Mylar 0.0068μF 50V $\pm$10%	1
C124	CM6 8 2500 K00MV	Mylar 0.0068μF 50V $\pm$10%	1
C125	CC2 0 1500 KD00C	Ceramic 200pF 50V $\pm$10%	1
C126	CC3 3 1500 KE00C	Ceramic 330pF 50V $\pm$10%	1
C127	CD1 0 5100 0000V	Electrolytic 1μF 10V	1
C128	CC4 7 1500 KE00C	Ceramic 470pF 50V $\pm$10%	1
C129	CD1 0 5100 0000V	Electrolytic 1μF 10V	1
C136	CD2 2 6100 0001V	Electrolytic 22μF 10V	1
C137	CD2 2 5500 0002V	Electrolytic 2.2μF 50V	1
C138	CD2 2 5500 0002V	Electrolytic 2.2μF 50V	1
C139	CC8 2 1500 KE00C	Ceramic 820pF 50V $\pm$10%	1
C140	CD1 0 6100 0001V	Electrolytic 10μF 10V	1
C143	4 2239 70650	Capacitor 2200μF 10V	1
C144	CD1 0 7100 0001V	Electrolytic 100μF 10V	1
C145	CM1 5 4500 K00SV	Mylar 0.15μF 50V $\pm$10%	1
C151	CC3 9 2500 KE00C	Ceramic 0.0039μF 50V $\pm$10%	1
C203	CM1 5 2500 K00SV	Mylar 0.0015μF 50V $\pm$10%	1
C204	CC8 2 1500 KE00C	Ceramic 820pF 50V $\pm$10%	1
C205	CC2 2 1500 KE00C	Ceramic 220pF 50V $\pm$10%	1
C206	CC2 2 0500 KD00C	Ceramic 22pF 50V $\pm$10%	1
C207	CC3 3 1500 KE00C	Ceramic 330pF 50V $\pm$10%	1
C208	CD3 3 6100 0001V	Electrolytic 33μF 10V	1
C209	CM1 0 3500 K00SV	Mylar 0.01μF 50V $\pm$10%	1
C210	CC2 2 1500 KE00C	Ceramic 220pF 50V $\pm$10%	1
C211	CD3 3 4100 0002V	Electrolytic 0.33μF 10V	1
C212	CD4 7 4100 0002V	Electrolytic 0.47μF 10V	1
C213	CC2 2 3500 KE00C	Ceramic 0.022μF 50V $\pm$10%	1
C214	CD4 7 5100 0000V	Electrolytic 4.7μF 10V	1
C215	CM4 7 2500 K00MV	Mylar 0.0047μF 50V $\pm$10%	1
C216	CD1 0 6100 0001V	Electrolytic 10μF 10V	1
C217	CM1 8 3500 K00SV	Mylar 0.018μF 50V $\pm$10%	1
C218	CC4 7 2500 KE00C	Ceramic 0.0047μF 50V $\pm$10%	1
C221	CM1 8 3500 K00SV	Mylar 0.018μF 50V $\pm$10%	1
C222	CM1 5 2500 K00SV	Mylar 0.0015μF 50V $\pm$10%	1
C223	CM6 8 2500 K00MV	Mylar 0.0068μF 50V $\pm$10%	1
C224	CM6 8 2500 K00MV	Mylar 0.0068μF 50V $\pm$10%	1
C225	CC2 0 1500 KD00C	Ceramic 200pF 50V $\pm$10%	1
C226	CC3 3 1500 KE00C	Ceramic 330pF 50V $\pm$10%	1
C227	CD1 0 5100 0000V	Electrolytic 1μF 10V	1
C228	CC4 7 1500 KE00C	Ceramic 470pF 50V $\pm$10%	1
C229	CD1 0 5100 0000V	Electrolytic 1μF 10V	1
C236	CD2 2 6100 0001V	Electrolytic 22μF 10V	1
C237	CD2 2 5500 0002V	Electrolytic 2.2μF 50V	1
C238	CD2 2 5500 0002V	Electrolytic 2.2μF 50V	1
C239	CC8 2 1500 KE00C	Ceramic 820pF 50V $\pm$10%	1
C240	CD1 0 6100 0001V	Electrolytic 10μF 10V	1
C243	4 2239 70650	Capacitor 2200μF 10V	1
C244	CD1 0 7100 0001V	Electrolytic 100μF 10V	1
C245	CM1 5 4500 K00SV	Mylar 0.15μF 50V $\pm$10%	1
C251	CC3 9 2500 KE00C	Ceramic 0.0039μF 50V $\pm$10%	1
C302	CD1 0 6100 0001V	Electrolytic 10μF 10V	1
C303	CC3 3 2500 ZG00C	Ceramic 0.0033μF 50V +80,-20%	1
C305	CD3 3 7100 0001V	Electrolytic 330μF 10V	1
C306	CC2 2 3500 ZG00C	Ceramic 0.022μF 50V +80,-20%	1
C313	CD4 7 7100 0001V	Electrolytic 470μF 10V	1

P.C.BOARD PARTS LIST (Continued)

Ref. No.	Part No.	Description				Q'ty
C314	CD1 0 5100 0000V	Electrolytic	1μF	10V		1
C315	CD4 7 6100 0001V	Electrolytic	47μF	10V		1
C316	CD4 7 6100 0001V	Electrolytic	47μF	10V		1
C317	CD4 7 7160 0001V	Electrolytic	470μF	16V		1
C320	CD1 0 7100 0001V	Electrolytic	100μF	10V		1
C321	CD1 0 6100 0001V	Electrolytic	10μF	10V		1
C322	CM6 8 2500 K00SV	Mylar	0.0068μF	50V	± 10%	1
C323	CM6 8 2500 K00SV	Mylar	0.0068μF	50V	± 10%	1
C324	CM1 5 3500 K00SV	Mylar	0.015μF	50V	± 10%	1
C325	CM4 7 3500 K00SV	Mylar	0.047μF	50V	± 10%	1
C326	CP5 6 2101 J000V	Polypropylen	0.0056μF	100V	± 5%	1
C327	CM3 3 2500 K00SV	Mylar	0.0033μF	50V	± 10%	1
C328	CM1 0 3500 K00SV	Mylar	0.01μF	50V	± 10%	1
C329	CA1 0 5160 X000V	Aluminum	1μF	16V	+40,-20%	1
C338	CD1 0 8160 0001V	Electrolytic	1000μF	16V		1
C339	CD1 0 7100 0001V	Electrolytic	100μF	10V		1
C342	CD1 0 6100 0001V	Electrolytic	10μF	10V		1
C343	CC1 0 3500 ZG00C	Ceramic	0.01μF	50V	+80,-20%	1
R103	RP2 2 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R104	RP4 7 2121 JH000	Pretty Carbon	4.7kΩ	1/8W	± 5%	1
R105	RP1 0 0121 JH000	Pretty Carbon	10Ω	1/8W	± 5%	1
R106	RD1 8 5251 JS000	Carbon	1.8MΩ	1/4W	± 5%	1
R107	RP1 0 4121 JH000	Pretty Carbon	100kΩ	1/8W	± 5%	1
R108	RP2 2 4121 JH000	Pretty Carbon	220kΩ	1/8W	± 5%	1
R109	RP1 8 4121 JH000	Pretty Carbon	180kΩ	1/8W	± 5%	1
R110	RP7 5 0121 JH000	Pretty Carbon	75Ω	1/8W	± 5%	1
R111	RP1 3 3121 JH000	Pretty Carbon	13kΩ	1/8W	± 5%	1
R112	RP3 9 0121 JH000	Pretty Carbon	39Ω	1/8W	± 5%	1
R113	RP6 8 1121 JH000	Pretty Carbon	680Ω	1/8W	± 5%	1
R114	RP6 8 1121 JH000	Pretty Carbon	680Ω	1/8W	± 5%	1
R115	RP1 0 4121 JH000	Pretty Carbon	100kΩ	1/8W	± 5%	1
R116	RP3 3 2121 JH000	Pretty Carbon	3.3kΩ	1/8W	± 5%	1
R117	RP3 9 2121 JH000	Pretty Carbon	3.9kΩ	1/8W	± 5%	1
R118	RP2 2 3121 JH000	Pretty Carbon	22kΩ	1/8W	± 5%	1
R119	RP2 7 2121 JH000	Pretty Carbon	2.7kΩ	1/8W	± 5%	1
R120	RP4 7 4121 JH000	Pretty Carbon	470kΩ	1/8W	± 5%	1
R121	RP6 8 2121 JH000	Pretty Carbon	6.8kΩ	1/8W	± 5%	1
R127	RP2 2 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R128	RP1 0 3121 JH000	Pretty Carbon	10kΩ	1/8W	± 5%	1
R129	RP8 2 2121 JH000	Pretty Carbon	8.2kΩ	1/8W	± 5%	1
R130	RP3 3 2121 JH000	Pretty Carbon	3.3kΩ	1/8W	± 5%	1
R131	RP2 2 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R132	RP2 2 3121 JH000	Pretty Carbon	22kΩ	1/8W	± 5%	1
R133	RP3 3 4121 JH000	Pretty Carbon	330kΩ	1/8W	± 5%	1
R134	RP2 2 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R135	RP1 5 1121 JH000	Pretty Carbon	150Ω	1/8W	± 5%	1
R136	RP1 0 4121 JH000	Pretty Carbon	100kΩ	1/8W	± 5%	1
R137	RP1 0 4121 JH000	Pretty Carbon	100kΩ	1/8W	± 5%	1
R138	RP3 3 2121 JH000	Pretty Carbon	3.3kΩ	1/8W	± 5%	1
R139	RP6 8 3121 JH000	Pretty Carbon	68kΩ	1/8W	± 5%	1
R140	RP2 2 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R141	RP1 8 3121 JH000	Pretty Carbon	18kΩ	1/8W	± 5%	1
R143	RP1 0 3121 JH000	Pretty Carbon	10kΩ	1/8W	± 5%	1
R144	RP1 0 3121 JH000	Pretty Carbon	10kΩ	1/8W	± 5%	1
R146	RP4 7 2121 JH000	Pretty Carbon	4.7kΩ	1/8W	± 5%	1
R155	RP4 7 2121 JH000	Pretty Carbon	4.7kΩ	1/8W	± 5%	1
R156	RP1 0 1121 JH000	Pretty Carbon	100Ω	1/8W	± 5%	1
R159	RP2 2 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R160	RP2 2 A121 JH000	Pretty Carbon	2.2Ω	1/8W	± 5%	1
R161	RD2 2 1251 JH000	Carbon	220Ω	1/4W	± 5%	1
R162	RP1 8 3121 JH000	Pretty Carbon	18kΩ	1/8W	± 5%	1
R163	RP1 0 3121 JH000	Pretty Carbon	10kΩ	1/8W	± 5%	1
R203	RP2 2 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R204	RP4 7 2121 JH000	Pretty Carbon	4.7kΩ	1/8W	± 5%	1

Ref. No.	Part No.	Description				Q'ty
R205	RP1 0 0121 JH000	Pretty Carbon	10Ω	1/8W	± 5%	1
R206	RD1 8 5251 JS000	Carbon	1.8MΩ	1/4W	± 5%	1
R207	RP1 0 4121 JH000	Pretty Carbon	100kΩ	1/8W	± 5%	1
R208	RP2 2 4121 JH000	Pretty Carbon	220kΩ	1/8W	± 5%	1
R209	RP1 8 4121 JH000	Pretty Carbon	180kΩ	1/8W	± 5%	1
R210	RP7 5 0121 JH000	Pretty Carbon	75Ω	1/8W	± 5%	1
R211	RP1 3 3121 JH000	Pretty Carbon	13kΩ	1/8W	± 5%	1
R212	RP3 9 0121 JH000	Pretty Carbon	39Ω	1/8W	± 5%	1
R213	RP6 8 1121 JH000	Pretty Carbon	680Ω	1/8W	± 5%	1
R214	RP6 8 1121 JH000	Pretty Carbon	680Ω	1/8W	± 5%	1
R215	RP1 0 4121 JH000	Pretty Carbon	100kΩ	1/8W	± 5%	1
R216	RP3 3 2121 JH000	Pretty Carbon	3.3kΩ	1/8W	± 5%	1
R217	RP3 9 2121 JH000	Pretty Carbon	3.9kΩ	1/8W	± 5%	1
R218	RP2 2 3121 JH000	Pretty Carbon	22kΩ	1/8W	± 5%	1
R219	RP2 7 2121 JH000	Pretty Carbon	2.7kΩ	1/8W	± 5%	1
R220	RP4 7 4121 JH000	Pretty Carbon	470kΩ	1/8W	± 5%	1
R221	RP6 8 2121 JH000	Pretty Carbon	6.8kΩ	1/8W	± 5%	1
R227	RP2 2 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R228	RP1 0 3121 JH000	Pretty Carbon	10kΩ	1/8W	± 5%	1
R229	RP8 2 2121 JH000	Pretty Carbon	8.2kΩ	1/8W	± 5%	1
R230	RP3 3 2121 JH000	Pretty Carbon	3.3kΩ	1/8W	± 5%	1
R231	RP2 2 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R232	RP2 2 3121 JH000	Pretty Carbon	22kΩ	1/8W	± 5%	1
R233	RP3 3 4121 JH000	Pretty Carbon	330kΩ	1/8W	± 5%	1
R234	RP2 2 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R235	RP1 5 1121 JH000	Pretty Carbon	150Ω	1/8W	± 5%	1
R236	RP1 0 4121 JH000	Pretty Carbon	100kΩ	1/8W	± 5%	1
R237	RP1 0 4121 JH000	Pretty Carbon	100kΩ	1/8W	± 5%	1
R238	RP3 3 2121 JH000	Pretty Carbon	3.3kΩ	1/8W	± 5%	1
R239	RP6 8 3121 JH000	Pretty Carbon	68kΩ	1/8W	± 5%	1
R240	RP2 2 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R241	RP1 8 3121 JH000	Pretty Carbon	18kΩ	1/8W	± 5%	1
R243	RP1 0 3121 JH000	Pretty Carbon	10kΩ	1/8W	± 5%	1
R244	RP1 0 3121 JH000	Pretty Carbon	10kΩ	1/8W	± 5%	1
R246	RP4 7 2121 JH000	Pretty Carbon	4.7kΩ	1/8W	± 5%	1
R255	RP4 7 2121 JH000	Pretty Carbon	4.7kΩ	1/8W	± 5%	1
R256	RP1 0 1121 JH000	Pretty Carbon	100Ω	1/8W	± 5%	1
R259	RP2 2 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R260	RP2 2 A121 JH000	Pretty Carbon	2.2Ω	1/8W	± 5%	1
R261	RD2 2 1251 JH000	Carbon	220Ω	1/4W	± 5%	1
R262	RP1 8 3121 JH000	Pretty Carbon	18kΩ	1/8W	± 5%	1
R263	RP1 0 3121 JH000	Pretty Carbon	10kΩ	1/8W	± 5%	1
R304	RP1 2 2121 JH000	Pretty Carbon	1.2kΩ	1/8W	± 5%	1
R305	RP5 6 2121 JH000	Pretty Carbon	5.6kΩ	1/8W	± 5%	1
R306	RP1 8 2121 JH000	Pretty Carbon	1.8kΩ	1/8W	± 5%	1
R307	RP4 7 0121 JH000	Pretty Carbon	47Ω	1/8W	± 5%	1
R308	RP1 0 3121 JH000	Pretty Carbon	10kΩ	1/8W	± 5%	1
R316	RP4 7 1121 JH000	Pretty Carbon	470Ω	1/8W	± 5%	1
R317	RP2 2 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R318	RP2 2 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R319	RD2 2 0251 JN000	Carbon	22Ω	1/4W	± 5%	1
R320	RP2 2 3121 JH000	Pretty Carbon	22kΩ	1/8W	± 5%	1
R330	RD2 2 1251 JN000	Carbon	220Ω	1/4W	± 5%	1
R331	RP5 6 A121 JH000	Pretty Carbon	5.6Ω	1/8W	± 5%	1
R332	RD4 7 0251 JH000	Carbon	47Ω	1/4W	± 5%	1
R333	RD1 8 0251 JH000	Carbon	18Ω	1/4W	± 5%	1
R334	RP1 2 3121 JH000	Pretty Carbon	12kΩ	1/8W	± 5%	1
R335	RD3 3 A251 JH000	Carbon	3.3Ω	1/4W	± 5%	1
R336	RP1 2 3121 JH000	Pretty Carbon	12kΩ	1/8W	± 5%	1
R337	RD3 3 A251 JH000	Carbon	3.3Ω	1/4W	± 5%	1
R338	RP1 5 3121 JH000	Pretty Carbon	15kΩ	1/8W	± 5%	1
R339	RP2 2 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R340	RP4 7 0121 JH000	Pretty Carbon	47Ω	1/8W	± 5%	1
R342	RP2 2 3121 JH000	Pretty Carbon	22kΩ	1/8W	± 5%	1

P.C.BOARD PARTS LIST (Continued)

Ref. No.	Part No.	Description			Q'ty
R416	RD1 5 1251 JN000	Carbon	150Ω	1/4W ± 5%	1
	RADIO TUNER P.C.B. ASSY				
PCB2	4 1259 71582	Radio Tuner P.C.B. Assy			1
	4 2569 70740	Case IFT			2
	101 3 1302 60411	Screw, Pan Hd.	+M2.6x4		4
	101 3 1302 60611	Screw, Pan Hd.	+M2.6x6		1
	141 2 3229 23000	Shield Plate			1
	141 2 3229 38500	Shield Plate			1
	141 2 3529 08600	Spacer, REC Lock			1
	141 2 4729 04400	Staple, 12.5mm			2
	141 2 4729 04700	Staple, 10mm			7
	141 2 4729 05000	Staple, 5mm			15
	141 2 4729 07900	Staple, 7.5mm			1
	141 2 6219 03600	Arm Band Select			1
	141 2 6229 01000	Plate Band Select			1
	4 2369 70740	Pin RT			12
CN1	4 2369 72892	Connector 4P			1
CN2	4 2369 72890	Connector 2P			1
S1	4 2319 72180	Switch Slide (Band Select)			1
L1	4 2589 71960	FM OSC Trans			1
L2	4 2579 71200	Bar Antenna			1
L3	4 2729 70530	Low Pass Filter			1
L4	4 2729 70530	Low Pass Filter			1
L5	4 2539 70930	Band Pass Filter			1
T1	4 2599 70700	FM RF Trans			1
T2	4 2569 71282	Trap Coil			1
T3	4 2569 70990	IFT 10.7MHz			1
T4	4 2569 70326	IFT 10.7MHz			1
T5	4 2569 70336	IFT 10.7MHz			1
T6	4 2569 70910	IFT AM			1
T7	4 2569 70820	IFT AM			1
T8	4 2569 71010	IFT 455KHz			1
T9	4 2579 70721	Antenna Coil			1
T10	4 2589 72010	OSC Trans			1
T11	4 2589 71360	OSC Trans			1
T12	4 2589 70703	OSC Trans			1
TC3	4 2249 70290	Trimmer Condenser			1
TC4	4 2249 70290	Trimmer Condenser			1
TC5	4 2249 70290	Trimmer Condenser			1
TC6	4 2249 70290	Trimmer Condenser			1
TC7	4 2249 70350	Trimmer Condenser			1
TC8	4 2249 70350	Trimmer Condenser			1
PVC1	4 2249 70451	Variable Condenser			1
P1	4 2229 73053	Potentiometer (B-5kΩ)			1
CF1	4 2539 70230	Filter Ceramic			1
CF2	4 2539 70230	Filter Ceramic			1
FB1	4 2539 70211	Ferrite Bead			1
D1	4 2029 70860	Diode, ITT 73N			1
D2	4 2029 70791	Diode, ITT 410			1
D3	4 2029 71850	Diode, 2-0A90			1
D4	4 2029 71850	Diode, 2-0A90			1
D5	4 2029 71950	Diode, HP80			1
D6	4 2029 71950	Diode, HP80			1
D7	4 2029 71950	Diode, HP80			1
D8	4 2029 71950	Diode, HP80			1
D9	4 2029 71950	Diode, HP80			1
D10	4 2029 71040	Diode, RD5.6			1
D11	4 2029 70860	Diode, ITT 73N			1
IC1	4 2069 70232	IC, μPC1018E			1
IC2	4 2069 70501	IC, AN7410N			1
Q1	4 2039 70380	Transistor, 2SC1674			1
Q2	4 2039 70460	Transitsor, 2SC1675			1
Q3	4 2039 70460	Transistor, 2SC1675			1
Q4	4 2039 70961	Transistor, 2SC 1684			1
Q5	4 2039 70460	Transistor, 2SC1675			1
C1	CI3 3 1500 KE00R	Boundary	330pF	50V ± 10%	1
C2	CI2 2 3160 XG00R	Boundary	0.022μF	16V +40,-20%	1
C3	CI2 2 3160 XG00R	Boundary	0.022μF	16V +40,-20%	1
C4	CC2 2 0500 JCH0C	Ceramic	22pF	50V ± 5%	1
C5	CC1 0 A500 CCH0C	Ceramic	1pF	50V ± 0.2pF	1
C6	CI2 2 3160 XG00R	Boundary	0.022μF	16V +40,-20%	1
C7	CI2 2 3160 XG00R	Boundary	0.022μF	16V +40,-20%	1
C8	CI2 2 3160 XG00R	Boundary	0.022μF	16V +40,-20%	1
C9	CC1 5 0500 JCH0C	Ceramic	15pF	50V ± 5%	1
C10	CC1 0 0500 JCH0C	Ceramic	10pF	50V ± 5%	1
C11	CC1 5 0500 JCH0C	Ceramic	15pF	50V ± 5%	1
C12	CC1 0 A500 CCH0C	Ceramic	1pF	50V ± 0.2pF	1
C13	CC1 8 0500 JCH0C	Ceramic	18pF	50V ± 5%	1
C14	CC2 0 A500 CCH0C	Ceramic	2pF	50V ± 0.2pF	1
C15	CI2 2 3250 KE00C	Boundary	0.022μF	25V ± 10%	1
C16	CC1 2 0500 KD00C	Ceramic	12pF	50V ± 10%	1
C17	CI1 0 2500 KE00R	Boundary	0.001μF	50V ± 10%	1
C18	CI2 2 3250 KE00C	Boundary	0.022μF	25V ± 10%	1
C19	CI2 2 3250 KE00C	Boundary	0.022μF	25V ± 10%	1
C20	CI2 2 3160 XG00R	Boundary	0.022μF	16V +40,-20%	1
C21	CC1 0 A500 CCH0C	Ceramic	1pF	50V ± 0.2pF	1
C22	CI2 2 3250 KE00C	Boundary	0.022μF	25V ± 10%	1
C23	CC2 2 1500 KE00C	Ceramic	220pF	50V ± 10%	1
C24	CC2 2 1500 KE00C	Ceramic	220pF	50V ± 10%	1
C25	CD4 7 5100 0002V	Electrolytic	4.7μF	10V	1
C26	CC2 2 1500 KE00C	Ceramic	220pF	50V ± 10%	1
C27	CC1 0 2500 KE00C	Ceramic	0.001μF	50V ± 10%	1
C28	CD4 7 5160 0002V	Electrolytic	4.7μF	16V	1
C29	CI2 2 3160 XG00R	Boundary	0.022μF	16V +40,-20%	1
C30	CI1 0 3250 KE00C	Boundary	0.01μF	25V ± 10%	1
C31	CI2 2 3160 XG00R	Boundary	0.022μF	16V +40,-20%	1
C32	CD2 2 6100 0000V	Electrolytic	22μF	10V	1
C33	CI2 2 3160 XG00R	Boundary	0.022μF	16V +40,-20%	1
C34	CD2 2 6100 0002V	Electrolytic	22μF	10V	1
C35	CI2 2 3160 XG00R	Boundary	0.022μF	16V +40,-20%	1
C36	CI1 0 3250 KE00C	Boundary	0.01μF	25V ± 10%	1
C37	CI1 0 3250 KE00C	Boundary	0.01μF	25V ± 10%	1
C38	CD4 7 4100 0002V	Electrolytic	0.47μF	10V	1
C39	CC8 2 A500 JCH0C	Ceramic	8.2pF	50V ± 5%	1
C40	CI2 2 3250 KE00C	Boundary	0.022μF	25V ± 10%	1
C41	CD1 0 6160 0002V	Electrolytic	10μF	16V	1
C42	CI2 2 3250 KE00C	Boundary	0.022μF	25V ± 10%	1
C43	CD4 7 5100 0002V	Electrolytic	4.7μF	10V	1
C44	CS4 7 1500 J010F	Polystyroul	470pF	50V ± 5%	1
C45	CD4 7 4100 0002V	Electrolytic	0.47μF	10V	1
C46	CD2 2 4100 0002V	Electrolytic	0.22μF	10V	1
C47	CD4 7 4100 0002V	Electrolytic	0.47μF	10V	1
C48	CB4 7 4100 0000V	None-polar	0.47μF	10V	1
C49	CM4 7 3500 K00MV	Mylar	0.047μF	50V ± 10%	1
C50	CI2 2 3160 XG00R	Boundary	0.022μF	16V +40,-20%	1
C51	CD4 7 4100 0002V	Electrolytic	0.47μF	10V	1
C52	CI2 2 3160 XG00R	Boundary	0.022μF	16V +40,-20%	1
C53	CD4 7 4100 0002V	Electrolytic	0.47μF	10V	1
C54	CI1 0 3250 KE00C	Boundary	0.01μF	25V ± 10%	1
C55	CI2 2 3160 XG00R	Boundary	0.022μF	16V +40,-20%	1
C56	CD4 7 7100 0000V	Electrolytic	470μF	10V	1
C57	CC2 7 0500 KD00C	Ceramic	27pF	50V ± 10%	1
C58	CC5 6 A500 KD00R	Ceramic	5.6pF	50V ± 10%	1
C59	CC1 8 0500 JCH0C	Ceramic	18pF	50V ± 5%	1
C60	CC6 8 A500 KD00R	Ceramic	6.8pF	50V ± 10%	1
C61	CI2 2 3250 KE00C	Boundary	0.022μF	25V ± 10%	1

P.C.BOARD PARTS LIST (Continued)

Ref. No.	Part No.	Description			Q'ty
C62	CC2 7 0500 KD00C	Ceramic	27pF	50V ± 10%	1
C63	CS1 0 1500 J000V	Polystyroul	100pF	50V ± 5%	1
C64	CS3 1 2500 J010F	Polystyroul	0.0031μF	50V ± 5%	1
C65	CS3 5 1500 J010F	Polystyroul	350pF	50V ± 5%	1
C66	CS2 0 1500 J010F	Polystyroul	200pF	50V ± 5%	1
C67	CC3 0 A500 CCH0C	Ceramic	3pF	50V ± 0.2pF	1
C68	CC3 0 A500 CCH0C	Ceramic	3pF	50V ± 0.2pF	1
C69	CI2 2 3160 XG00R	Boundary	0.022μF	16V +40,-20%	1
C70	CC2 2 2500 KE00C	Ceramic	0.0022μF	50V ± 10%	1
C71	CI4 7 2250 KF00C	Boundary	0.0047μF	25V ± 10%	1
C72	CC3 9 A500 JD00R	Ceramic	3.9pF	50V ± 5%	1
R1	RP5 6 4121 JH000	Pretty Carbon	560kΩ	1/8W ± 5%	1
R2	RP4 7 2121 JH000	Pretty Carbon	4.7kΩ	1/8W ± 5%	1
R3	RP3 3 1121 JH000	Pretty Carbon	330Ω	1/8W ± 5%	1
R4	RP1 0 1121 JH000	Pretty Carbon	100Ω	1/8W ± 5%	1
R5	RP5 6 4121 JH000	Pretty Carbon	560kΩ	1/8W ± 5%	1
R6	RP1 2 3121 JH000	Pretty Carbon	12kΩ	1/8W ± 5%	1
R7	RP3 3 1121 JH000	Pretty Carbon	330Ω	1/8W ± 5%	1
R8	RP3 3 1121 JH000	Pretty Carbon	330Ω	1/8W ± 5%	1
R9	RP3 3 2121 JH000	Pretty Carbon	3.3kΩ	1/8W ± 5%	1
R10	RP3 9 4121 JH000	Pretty Carbon	390kΩ	1/8W ± 5%	1
R11	RP1 0 5121 JH000	Pretty Carbon	1MΩ	1/8W ± 5%	1
R12	RP2 2 2121 JH000	Pretty Carbon	2.2kΩ	1/8W ± 5%	1
R13	RP1 2 1121 JH000	Pretty Carbon	120Ω	1/8W ± 5%	1
R14	RP4 7 4121 JH000	Pretty Carbon	470kΩ	1/8W ± 5%	1
R15	RP1 0 1121 JH000	Pretty Carbon	100Ω	1/8W ± 5%	1
R16	RP2 2 0121 JH000	Pretty Carbon	22Ω	1/8W ± 5%	1
R17	RP1 2 1121 JH000	Pretty Carbon	120Ω	1/8W ± 5%	1
R18	RP1 0 2121 JH000	Pretty Carbon	1kΩ	1/8W ± 5%	1
R19	RP1 0 2121 JH000	Pretty Carbon	1kΩ	1/8W ± 5%	1
R20	RP4 7 2121 JH000	Pretty Carbon	4.7kΩ	1/8W ± 5%	1
R21	RP4 7 2121 JH000	Pretty Carbon	4.7kΩ	1/8W ± 5%	1
R22	RP1 0 3121 JH000	Pretty Carbon	10kΩ	1/8W ± 5%	1
R23	RP5 6 3121 JH000	Pretty Carbon	56kΩ	1/8W ± 5%	1
R24	RP1 0 1121 JH000	Pretty Carbon	100Ω	1/8W ± 5%	1
R25	RP1 0 3121 JH000	Pretty Carbon	10kΩ	1/8W ± 5%	1
R26	RP1 0 3121 JH000	Pretty Carbon	10kΩ	1/8W ± 5%	1
R27	RP4 7 3121 JH000	Pretty Carbon	47kΩ	1/8W ± 5%	1
R28	RP2 2 2121 JH000	Pretty Carbon	2.2kΩ	1/8W ± 5%	1
R29	RP1 0 3121 JH000	Pretty Carbon	10kΩ	1/8W ± 5%	1
R30	RP1 0 3121 JH000	Pretty Carbon	10kΩ	1/8W ± 5%	1
R31	RP1 0 3121 JH000	Pretty Carbon	10kΩ	1/8W ± 5%	1
R32	RD4 7 1251 JM000	Carbon	470Ω	1/4W ± 5%	1
R33	RP2 2 3121 JH000	Pretty Carbon	22kΩ	1/8W ± 5%	1
R34	RP1 0 2121 JH000	Pretty Carbon	1kΩ	1/8W ± 5%	1
R35	RP4 7 3121 JH000	Pretty Carbon	47kΩ	1/8W ± 5%	1
R36	RP2 2 2121 JH000	Pretty Carbon	2.2kΩ	1/8W ± 5%	1
R37	RP2 2 2121 JH000	Pretty Carbon	2.2kΩ	1/8W ± 5%	1
R40	RP5 6 A121 JH000	Pretty Carbon	5.6Ω	1/8W ± 5%	1
R41	RD6 8 0251 JM000	Carbon	68Ω	1/4W ± 5%	1
R42	RP4 7 3121 FH000	Pretty Carbon	47kΩ	1/8W ± 1%	1
R43	RP2 2 0121 JH000	Pretty Carbon	22Ω	1/8W ± 5%	1
R44	RP4 7 1121 JH000	Pretty Carbon	470Ω	1/8W ± 5%	1
R45	RP1 0 1121 JH000	Pretty Carbon	100Ω	1/8W ± 5%	1
R46	RP5 6 1121 JH000	Pretty Carbon	560Ω	1/8W ± 5%	1
R47	RD1 0 2251 JM000	Carbon	1kΩ	1/4W ± 5%	1

AMSS CONTROL P.C.B. ASSY

PCB3	4 1329 77691	AMSS Control P.C.B. Assy	1
	141 2 4729 05000	Staple, 5mm	5
CN8	4 2359 75558	Connector 3P Assy	1
S6	4 2319 74340	Peck Switch (AMSS Program)	1
D401	4 2029 71440	Diode, 1SS95	1
D402	4 2029 71440	Diode, 1SS95	1
D403	4 2029 71040	Diode, RD5.6	1
D404	202 5 9600 44610	Diode, DS 446	1
D405	4 2029 71620	LED, LN220RP (AMSS 1)	1
D406	4 2029 71620	LED, LN220RP (AMSS 2)	1
D407	4 2029 71620	LED, LN220RP (AMSS 3)	1
Q401	4 2039 70431	Transistor, 2SC 1815	1
Q402	4 2039 70431	Transistor, 2SC 1815	1
IC401	206 5 9417 51010	IC, LC7510	1
C401	CI6 8 2250 KF00C	Boundary 0.0068μF 25V ± 10%	1
C402	CI6 8 2250 KF00C	Boundary 0.0068μF 25V ± 10%	1
C403	CI6 8 2250 KF00C	Boundary 0.0068μF 25V ± 10%	1
C404	CD1 0 5100 0002V	Electrolytic 1μF 10V	1
C405	CI6 8 2250 KE00C	Boundary 0.0068μF 25V ± 10%	1
C406	CD1 0 6160 0002V	Electrolytic 10μF 16V	1
C407	CD1 0 5100 0002V	Electrolytic 1μF 10V	1
C408	CD1 0 5100 0002V	Electrolytic 1μF 10V	1
R401	RP6 8 0121 JH000	Pretty Carbon 68Ω 1/8W ± 5%	1
R402	RP3 3 2121 JH000	Pretty Carbon 3.3kΩ 1/8W ± 5%	1
R403	RP2 7 4121 JH000	Pretty Carbon 270kΩ 1/8W ± 5%	1
R404	RP5 6 2121 JH000	Pretty Carbon 5.6kΩ 1/8W ± 5%	1
R405	RP6 8 1121 JH000	Pretty Carbon 680Ω 1/8W ± 5%	1
R406	RP5 6 3121 JH000	Pretty Carbon 56kΩ 1/8W ± 5%	1
R407	RP1 5 4121 JH000	Pretty Carbon 150kΩ 1/8W ± 5%	1
R408	RP2 2 2121 JH000	Pretty Carbon 2.2kΩ 1/8W ± 5%	1
R409	RP1 8 4121 JH000	Pretty Carbon 180kΩ 1/8W ± 5%	1
R410	RP1 0 2121 JH000	Pretty Carbon 1kΩ 1/8W ± 5%	1
R411	RP1 5 4121 JH000	Pretty Carbon 150kΩ 1/8W ± 5%	1
R412	RP1 0 4121 JH000	Pretty Carbon 100kΩ 1/8W ± 5%	1
R414	RP4 7 2121 JH000	Pretty Carbon 4.7kΩ 1/8W ± 5%	1
R415	RP2 2 3121 JH000	Pretty Carbon 22kΩ 1/8W ± 5%	1

MIXING AMPLIFIER P.C.B. ASSY

PCB4	4 1329 77680	Mixing Amplifier P.C.B. Assy	1
J7	4 2359 75640	1P Jack 3.6 (Mike Mixing)	1
VR5	4 2229 73750	Control Volume (Mike Mixing, A-20kΩ)	1
Q303	203 5 5100 69362	Transistor, 2SC 693	1
Q304	4 2039 70431	Transistor, 2SC 1815	1
C307	CD1 0 5100 0002V	Electrolytic 1μF 10V	1
C308	CC4 7 1500 KE00C	Ceramic 470pF 50V ± 10%	1
C309	CD4 7 4100 0002V	Electrolytic 0.47μF 10V	1
C310	CD1 0 5100 0002V	Electrolytic 1μF 10V	1
C311	CC4 7 1500 KE00C	Ceramic 470pF 50V ± 10%	1
C312	CD1 0 4100 0002V	Electrolytic 0.1μF 10V	1
C341	CD1 0 7100 0001V	Electrolytic 100μF 10V	1
R310	RP1 0 5121 JH000	Pretty Carbon 1MΩ 1/8W ± 5%	1
R311	RP1 0 1121 JH000	Pretty Carbon 100Ω 1/8W ± 5%	1
R312	RP1 0 3121 JH000	Pretty Carbon 10kΩ 1/8W ± 5%	1
R313	RP4 7 0121 JH000	Pretty Carbon 47Ω 1/8W ± 5%	1
R314	RP3 9 4121 JH000	Pretty Carbon 390kΩ 1/8W ± 5%	1
R315	RP3 3 2121 JH000	Pretty Carbon 3.3kΩ 1/8W ± 5%	1

VOLUME CONTROL P.C.B. ASSY

PCB5	4 1329 77702	Volume Control P.C.B. Assy	1
	141 2 4729 05000	Staple, 5mm	3
	141 2 4729 05800	Staple, 15mm	2
	141 2 4729 07900	Staple, 7.5mm	1
CN4	4 2369 73150	Connector 5P	1
VR1	4 2229 73740	Control Volume (Bass, A-50kΩ)	1
VR2	4 2229 73740	Control Volume (Treble, A-50kΩ)	1
VR3	4 2229 73731	Control Volume (Volume, A-50kΩ)	1
VR4	4 2229 73741	Control Volume (Balance, MN-20kΩ)	1

P.C.BOARD PARTS LIST (Continued)

Ref. No.	Part No.	Description				Q'ty
C130	CM39 2500 K00SV	Mylar	0.0039μF	50V	± 10%	1
C131	CM33 3500 K00SV	Mylar	0.033μF	50V	± 10%	1
C132	CM33 3500 K00SV	Mylar	0.033μF	50V	± 10%	1
C133	CM10 4500 K00SV	Mylar	0.1μF	50V	± 10%	1
C134	CM68 2500 K00SV	Mylar	0.0068μF	50V	± 10%	1
C135	CM47 3500 K00SV	Mylar	0.047μF	50V	± 10%	1
C152	CC82 1500 KE00C	Ceramic	820pF	50V	± 10%	1
C153	CM10 4500 K00SV	Mylar	0.1μF	50V	± 10%	1
C230	CM39 2500 K00SV	Mylar	0.0039μF	50V	± 10%	1
C231	CM33 3500 K00SV	Mylar	0.033μF	50V	± 10%	1
C232	CM33 3500 K00SV	Mylar	0.033μF	50V	± 10%	1
C233	CM10 4500 K00SV	Mylar	0.1μF	50V	± 10%	1
C234	CM68 2500 K00SV	Mylar	0.0068μF	50V	± 10%	1
C235	CM47 3500 K00SV	Mylar	0.047μF	50V	± 10%	1
C252	CC82 1500 KE00C	Ceramic	820pF	50V	± 10%	1
C253	CM10 4500 K00SV	Mylar	0.1μF	50V	± 10%	1
R147	RP22 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R148	RP75 1121 JH000	Pretty Carbon	750Ω	1/8W	± 5%	1
R149	RP18 2121 JH000	Pretty Carbon	1.8kΩ	1/8W	± 5%	1
R150	RP56 2121 JH000	Pretty Carbon	5.6kΩ	1/8W	± 5%	1
R151	RP30 2121 JH000	Pretty Carbon	3kΩ	1/8W	± 5%	1
R152	RP47 2121 JH000	Pretty Carbon	4.7kΩ	1/8W	± 5%	1
R153	RP33 1121 JH000	Pretty Carbon	330Ω	1/8W	± 5%	1
R154	RP33 2121 JH000	Pretty Carbon	3.3kΩ	1/8W	± 5%	1
R247	RP22 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R248	RP75 1121 JH000	Pretty Carbon	750Ω	1/8W	± 5%	1
R249	RP18 2121 JH000	Pretty Carbon	1.8kΩ	1/8W	± 5%	1
R250	RP56 2121 JH000	Pretty Carbon	5.6kΩ	1/8W	± 5%	1
R251	RP30 2121 JH000	Pretty Carbon	3kΩ	1/8W	± 5%	1
R252	RP47 2121 JH000	Pretty Carbon	4.7kΩ	1/8W	± 5%	1
R253	RP33 1121 JH000	Pretty Carbon	330Ω	1/8W	± 5%	1
R254	RP33 2121 JH000	Pretty Carbon	3.3kΩ	1/8W	± 5%	1

JACK P.C.B. ASSY

PCB6	4 1329 77710	Jack P.C.B. Assy				1
CN11	4 2369 73140	Connector 4P				1
J1	4 2359 75640	1P Jack 3.6 (Mike, Left)				1
J2	4 2359 75640	1P Jack 3.6 (Mike, Right)				1
J3	4 2359 75650	4P Pin Jack (LINE)				1
D101	4 2029 71440	Diode, 1SS95				1
D201	4 2029 71440	Diode, 1SS95				1
D301	4 2029 71440	Diode, 1SS95				1
Q301	4 2039 70431	Transistor, 2SC 1815				1
C101	CA10 4100 M000V	Aluminum	0.1μF	10V	± 20%	1
C102	CC10 3500 KE00C	Ceramic	0.01μF	50V	± 10%	1
C201	CA10 4100 M000V	Aluminum	0.1μF	10V	± 20%	1
C202	CC10 3500 KE00C	Ceramic	0.01μF	50V	± 10%	1
C301	CD10 7100 0001V	Electrolytic	100μF	10V		1
R101	RP10 2121 JH000	Pretty Carbon	1kΩ	1/8W	± 5%	1
R102	RP22 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R142	RP56 3121 JH000	Pretty Carbon	56kΩ	1/8W	± 5%	1
R145	RP22 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R201	RP10 2121 JH000	Pretty Carbon	1kΩ	1/8W	± 5%	1
R202	RP22 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R242	RP56 3121 JH000	Pretty Carbon	56kΩ	1/8W	± 5%	1
R245	RP22 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R301	RP47 0121 JH000	Pretty Carbon	47Ω	1/8W	± 5%	1
R302	RP22 2121 JH000	Pretty Carbon	2.2kΩ	1/8W	± 5%	1
R303	RP82 2121 JH000	Pretty Carbon	8.2kΩ	1/8W	± 5%	1

Ref. No.	Part No.	Description				Q'ty

POWER SUPPLY P.C.B. ASSY

PCB7	4 1919 71542	Power Supply P.C.B. Assy				1
	4 2359 70910	Holder Fuse				2
	4 2359 70990	Socket Pin RT				2
	141 2 4729 05000	Staple, 5mm				2
F1	⚠ 4 2349 70370	Fuse, T 1.6A				1
J8	⚠ 4 2359 73682	Power Socket				1
D310	202 5 2320 13210	Diode, DS 132				1
D311	202 5 2320 13110	Diode, DS 131				1
C333	CC22 3500 ZG00C	Ceramic	0.022μF	50V	+80,-20%	1
C334	CC22 3500 ZG00C	Ceramic	0.022μF	50V	+80,-20%	1
C335	CC22 3500 ZG00C	Ceramic	0.022μF	50V	+80,-20%	1
C336	CC22 3500 ZG00C	Ceramic	0.022μF	50V	+80,-20%	1
C340	CD22 8160 0001V	Electrolytic	2200μF	16V		1

SWITCH P.C.B. ASSY

PCB8	4 1329 78160	Switch P.C.B. Assy				1
	4 2269 36620	PCB, Editor				1
CN5	4 2369 73140	Connector 4P				1
CN6	4 2369 70740	RT Pin				1
S7	4 2319 75330	Push Switch (Record Mute)				1
S8	4 2319 75330	Push Switch (Battery Check)				1
R309	RP10 4121 JH000	Pretty Carbon	100Ω	1/8W	± 5%	1

LED INDICATOR P.C.B. ASSY

PCB9	4 5119 70771	LED Indicator P.C.B. Assy				1
	4 5119 70770	LED Indicator				1
	141 2 4729 04700	Staple, 10mm				1
	CD33 6160 0000V	Electrolytic	33μF	16V		1
	CD10 5500 0000V	Electrolytic	1μF	50V		1
	CD47 5500 0000V	Electrolytic	4.7μF	50V		1
	RP10 4121 JT000	Pretty Carbon	100kΩ	1/8W	± 5%	1
	RP56 2121 JT000	Pretty Carbon	5.6kΩ	1/8W	± 5%	1
	RD20 3251 JN000	Carbon	20kΩ	1/4W	± 5%	1
	RD47 2251 JN000	Carbon	4.7kΩ	1/4W	± 5%	1

TERMINAL P.C.B. ASSY

PCB10	4 1329 77671	Terminal P.C.B. Assy				1
	4 2369 70740	RT Pin				3
	141 2 4729 05000	Staple, 5mm				1
	141 2 4729 04700	Staple, 10mm				2
CN7	4 2369 73130	Connector 3P				1
CN8	4 2369 73130	Connector 3P				1
CN10	4 2369 73160	Connector 6P				1
L301	4 2539 70841	Inductor (200μH)				1
L303	4 2559 70130	Coil (33mH)				1
D308	4 2029 71440	Diode, 1SS95				1
D313	202 5 3210 05613	Diode, GZA 5.6Z				1
D315	202 5 2450 13540	Diode, DS 135				1
D317	4 2029 71440	Diode, 1SS95				1
Q310	203 5 6820 98460	Transistor, 2SA984				1
Q311	203 5 7200 60850	Transistor, 2SA 608				1
C318	CD10 6100 0001V	Electrolytic	10μF	10V		1
C319	CD22 5500 0001V	Electrolytic	2.2μF	50V		1
C331	CD10 7160 0001V	Electrolytic	100μF	16V		1
R321	RP33 3121 JH000	Pretty Carbon	33kΩ	1/8W	± 5%	1
R322	RP10 2121 JH000	Pretty Carbon	1kΩ	1/8W	± 5%	1
R323	RP33 3121 JH000	Pretty Carbon	33kΩ	1/8W	± 5%	1

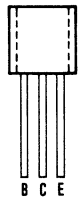
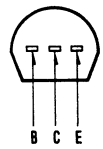
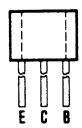
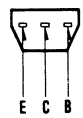
P.C.BOARD PARTS LIST (Continued)

Ref. No.	Part No.	Description				Q'ty
R324	RP1 0 2121 JH000	Pretty Carbon	1kΩ	1/8W	± 5%	1
R328	RP3 9 2121 JH000	Pretty Carbon	3.9kΩ	1/8W	± 5%	1
R329	RP7 5 3121 JH000	Pretty Carbon	75kΩ	1/8W	± 5%	1
R341	RP4 7 2121 JH000	Pretty Carbon	4.7kΩ	1/8W	± 5%	1
R343	RP1 0 2121 JH000	Pretty Carbon	1kΩ	1/8W	± 5%	1
R344	RP1 0 2121 JH000	Pretty Carbon	1kΩ	1/8W	± 5%	1
R345	RP5 6 2121 JH000	Pretty Carbon	5.6kΩ	1/8W	± 5%	1
R346	RP1 0 2121 JH000	Pretty Carbon	1kΩ	1/8W	± 5%	1
	OPERATION INDICATOR P.C.B. ASSY					
PCB11	4 1329 77660	Operation Indicator P.C.B. Assy				1
	4 2269 36670	PCB, LED				1
CN7	4 2359 75553	Connector 3P Assy				1
D320	4 2029 71810	LED, GL-9PR24 (Pause)				1
D321	4 2029 71800	LED, GL-9NG24 (Play)				1
D322	4 2029 71810	LED, GL-9PR24 (Record)				1
R325	RP6 8 1121 JH000	Pretty Carbon	680Ω	1/8W	± 5%	1
R326	RP1 5 2121 JH000	Pretty Carbon	1.5kΩ	1/8W	± 5%	1
R327	RP1 5 2121 JH000	Pretty Carbon	1.5kΩ	1/8W	± 5%	1

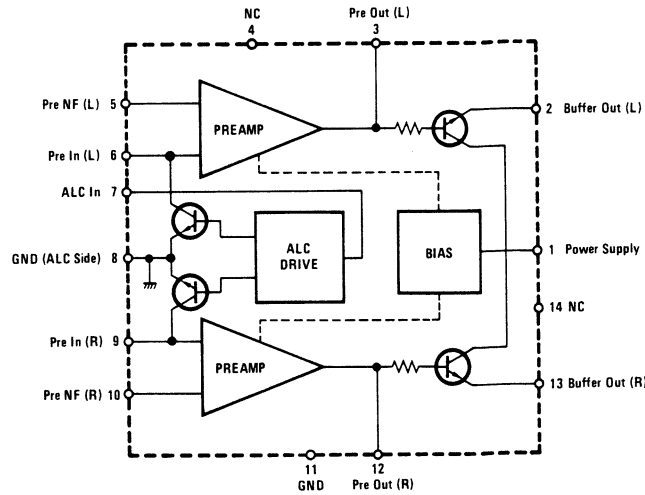
NOTES:

1. Parts order must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

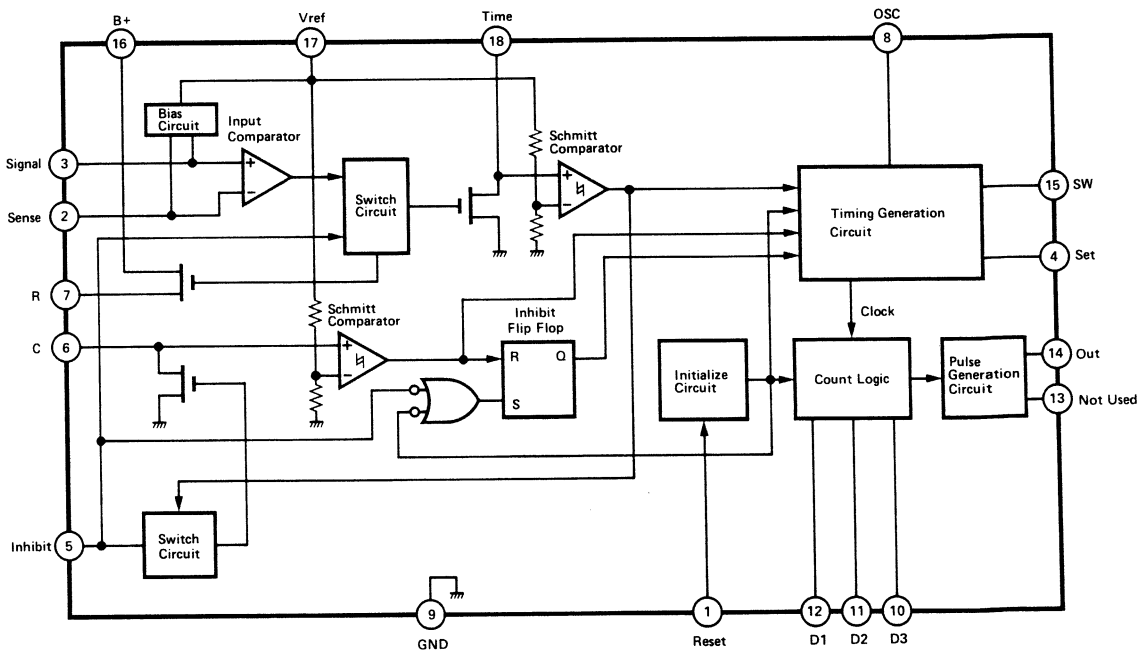
IC & TRANSISTOR LEAD IDENTIFICATION

TRANSISTOR	FRONT VIEW	BOTTOM VIEW
2SC693 2SC1674 2SC1675 2SC1684 2SC1815 2SD400 2SD734 2SA984 2SA608		
2SD1012		
TERMINAL NAME		
B → BASE C → COLLECTOR E → EMITTER		

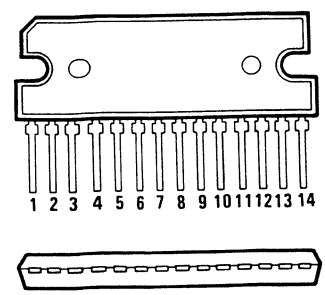
LC7510 BLOCK DIAGRAM



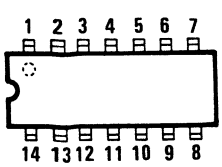
TA7658P BLOCK DIAGRAM



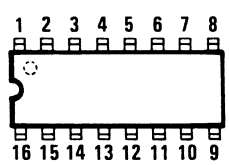
LA4185 FRONT/BOTTOM VIEW



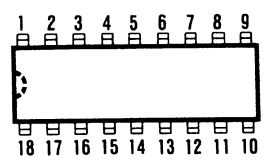
TA7658P BOTTOM VIEW



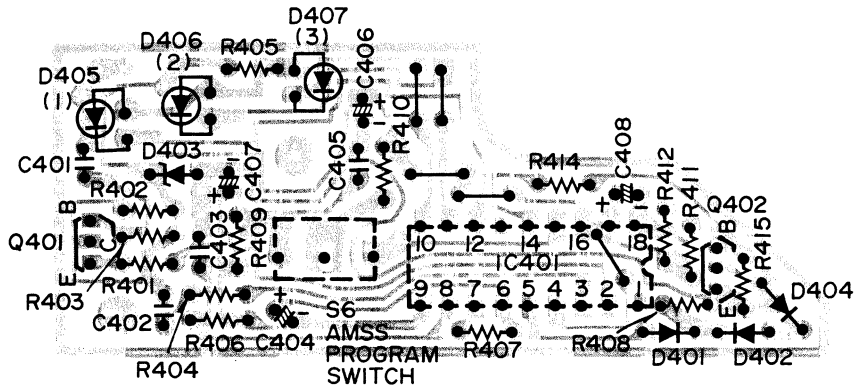
μPC1018, AN7410N BOTTOM VIEW



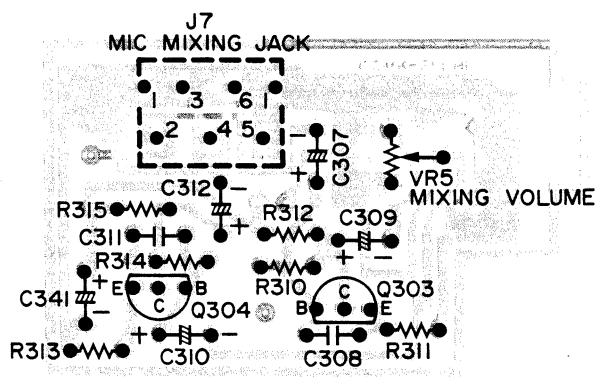
LC7510 BOTTOM VIEW



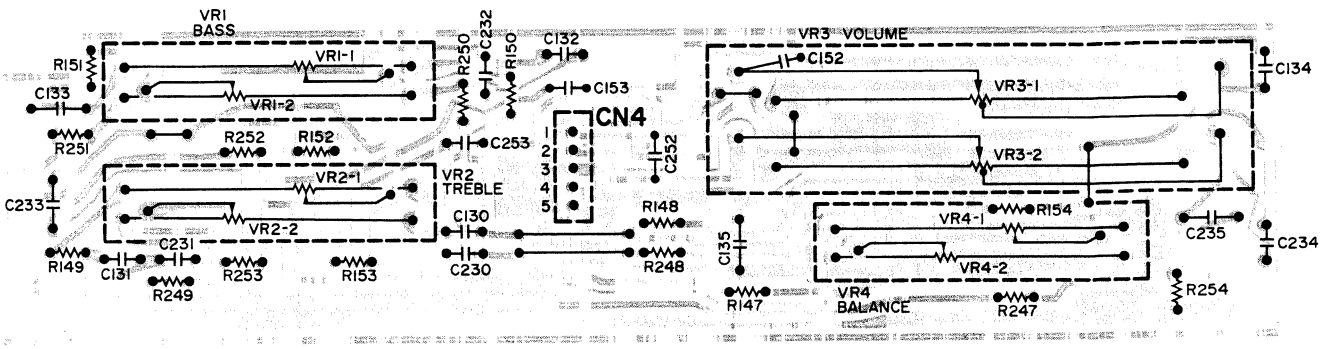
AMSS CONTROL P.C.BOARD



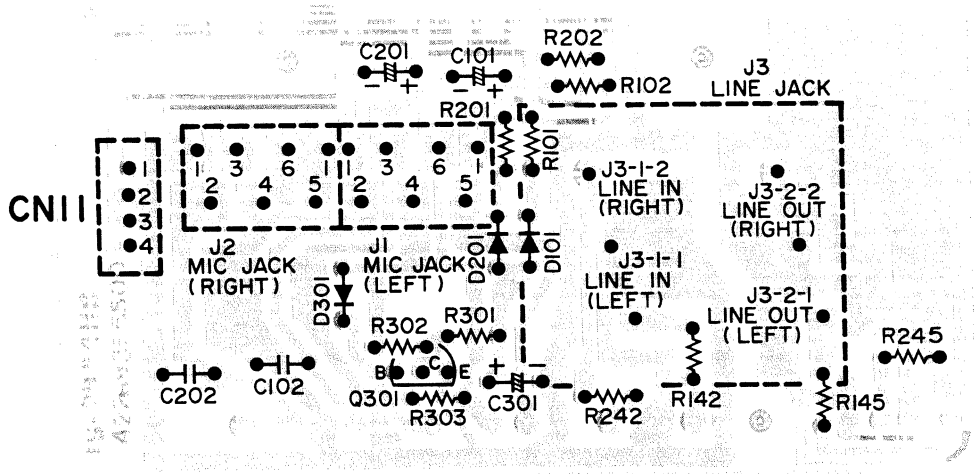
MIXING AMPLIFIER P.C.BOARD



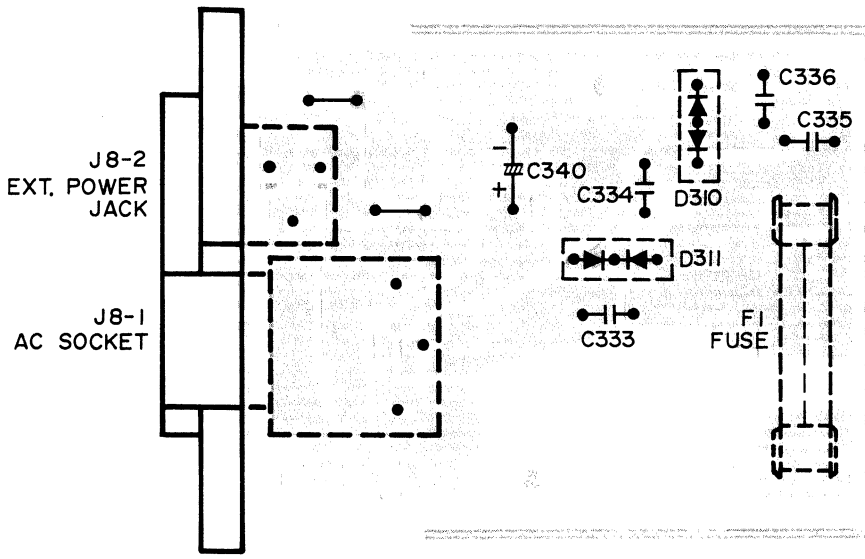
VOLUME CONTROL P.C.BOARD



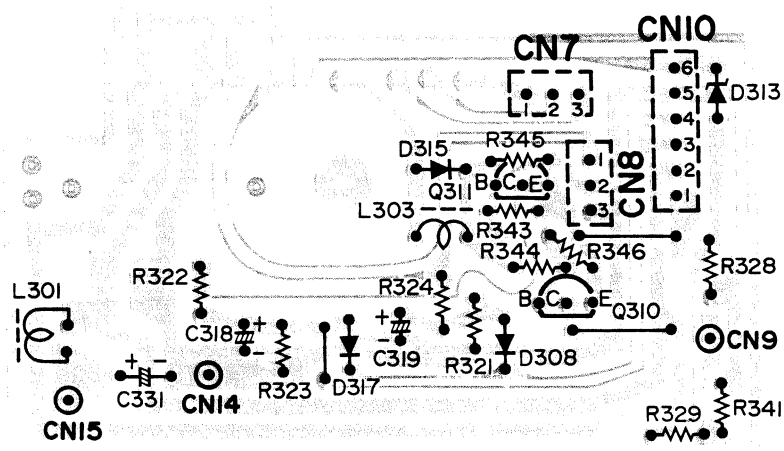
JACK P.C.BOARD



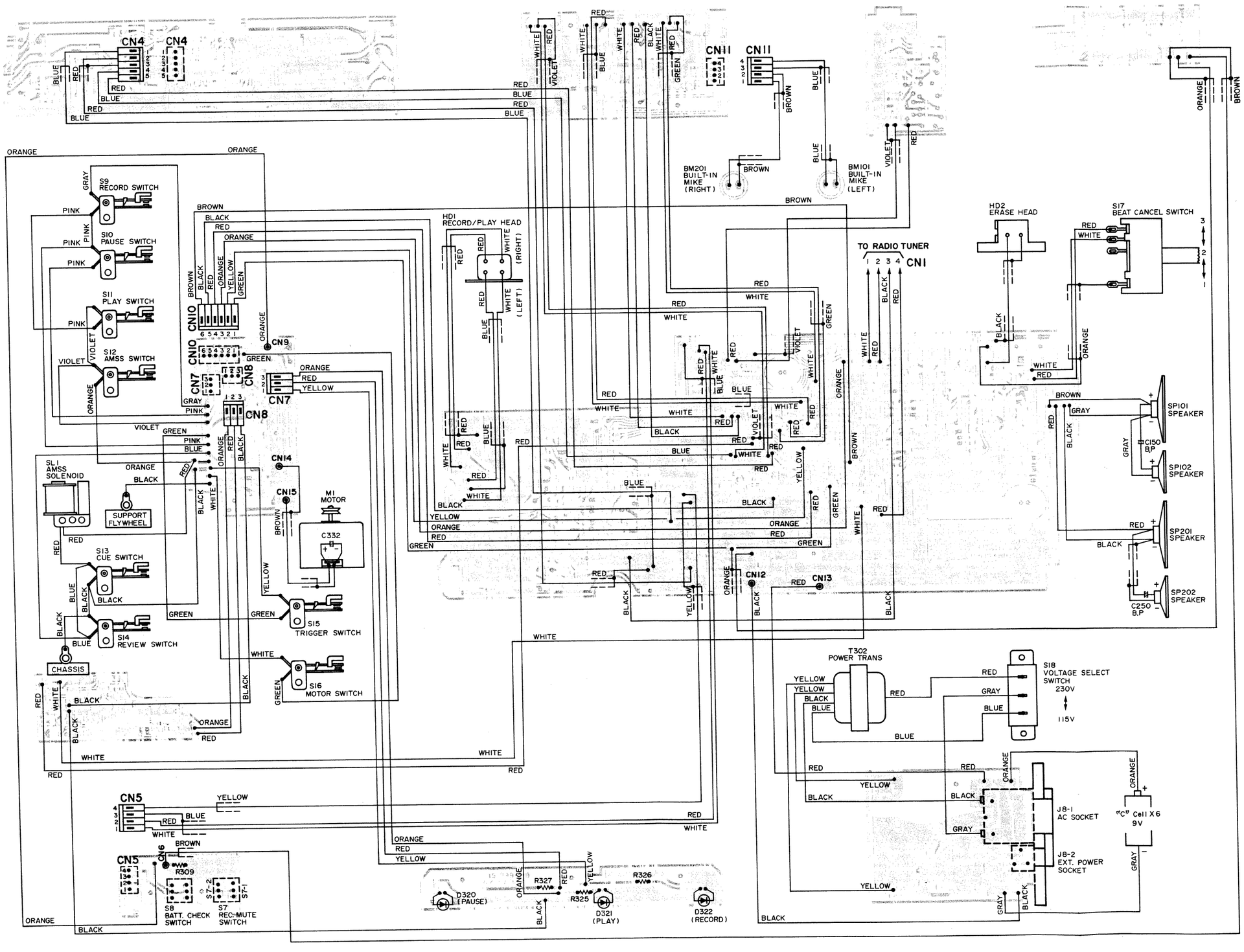
POWER SUPPLY P.C.BOARD



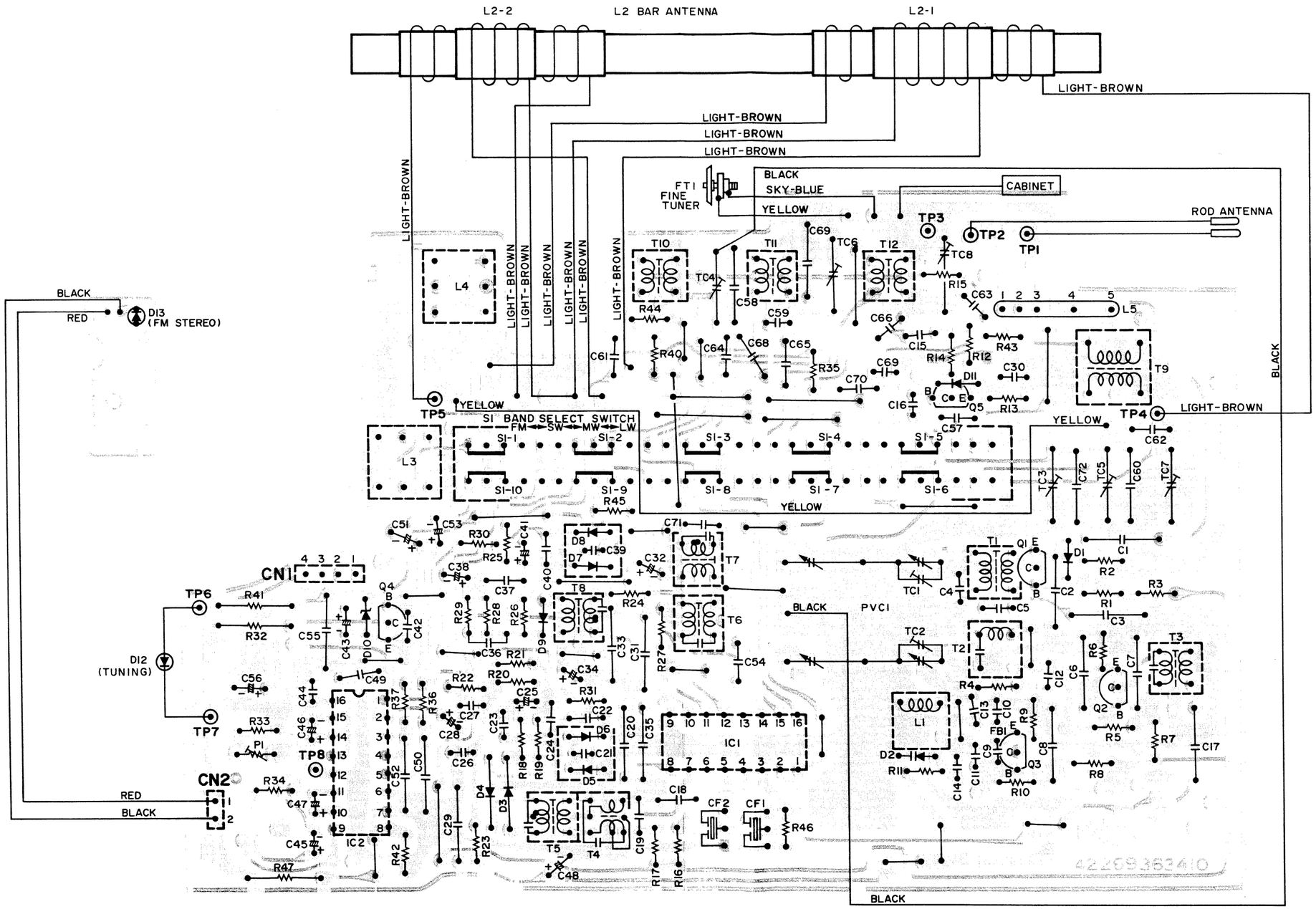
TERMINAL P.C.BOARD



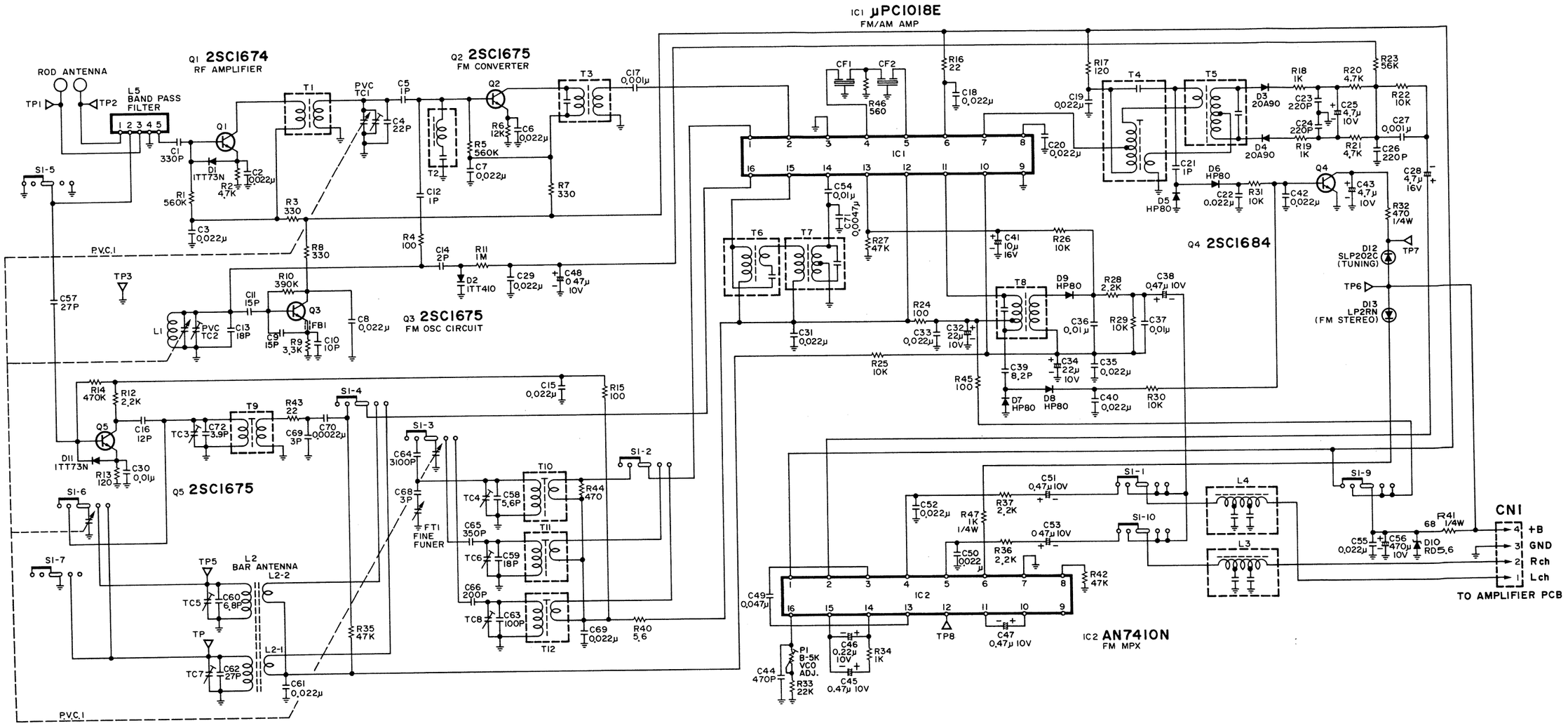
WIRING DIAGRAM



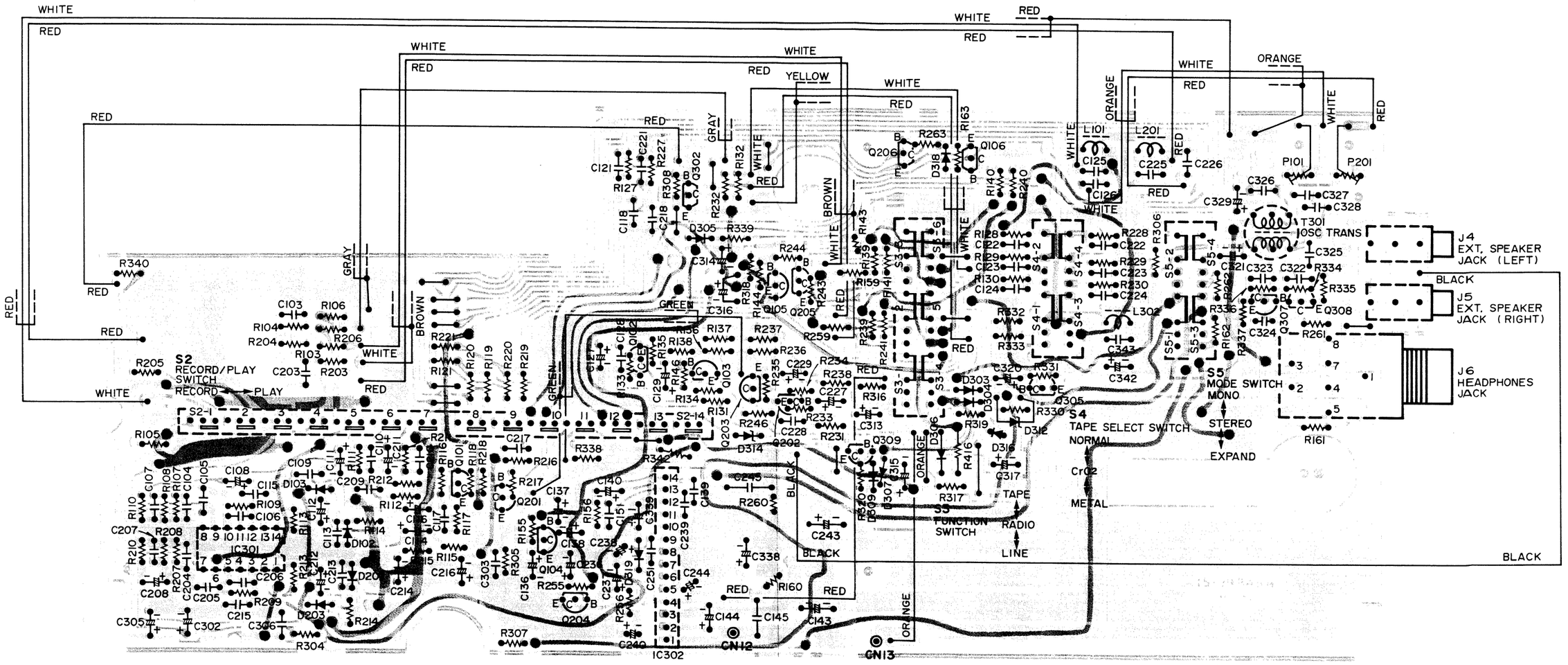
RADIO TUNER P.C.BOARD



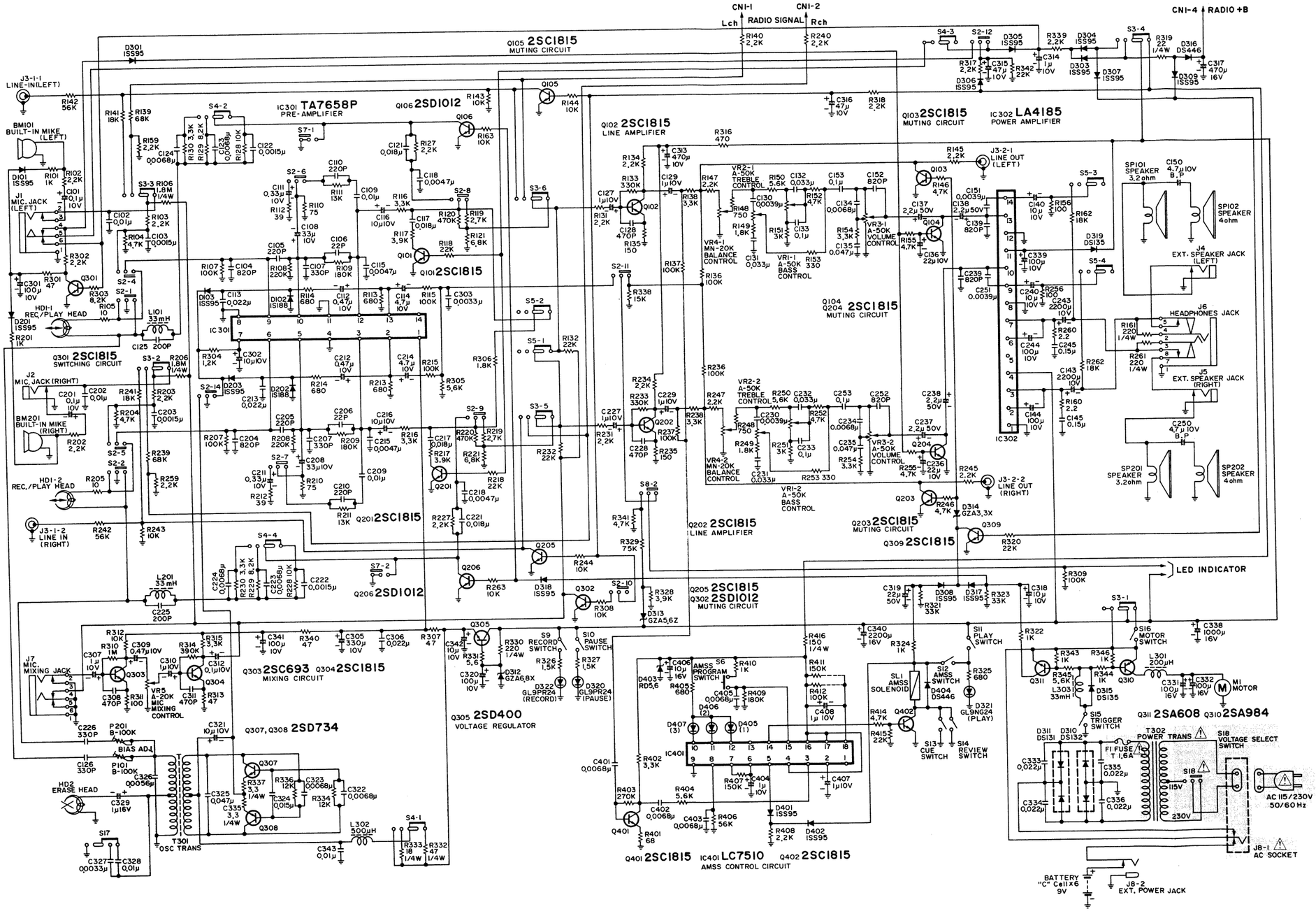
SCHEMATIC DIAGRAM (Tuner)



AMPLIFIER P.C.BOARD



SCHEMATIC DIAGRAM (Amplifier)



PRODUCT SAFETY NOTICE

PRODUCT SAFETY SHOULD BE CONSIDERED WHEN A COMPONENT REPLACEMENT IS MADE IN ANY AREA OF AN UNIT. COMPONENTS INDICATED BY A MARK ⚠ IN THIS SCHEMATIC DIAGRAM SHOW COMPONENTS WHOSE VALUE HAS SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. IT IS PARTICULARLY RECOMMENDED THAT ONLY PARTS SPECIFIED ON THE ATTACHED PARTS LIST BE USED FOR COMPONENT REPLACEMENT POINTED OUT BY THE MARK.

No.	Name	Position	No.	Name	Position	No.	Name	Po sition
S1	Band Select Switch	FM	S7	REC. Mute Switch	OFF	S13	Cue Switch	OFF
S2	Record/Playback Switch	PLAY	S8	Battery Check Switch	OFF	S14	Review Switch	OFF
S3	Function Switch	TAPE	S9	Record Switch	OFF	S15	Trigger Switch	OFF
S4	Tape Selelct Switch	Normal	S10	Pause Switch	OFF	S16	Motor Switch	OFF
S5	Mode Switch	MONO	S11	Play Switch	OFF	S17	Beat Cancel Switch	3
S6	AMSS Program Switch	OFF	S12	AMSS Switch	OFF	S18	Voltage Select Switch	≥30V